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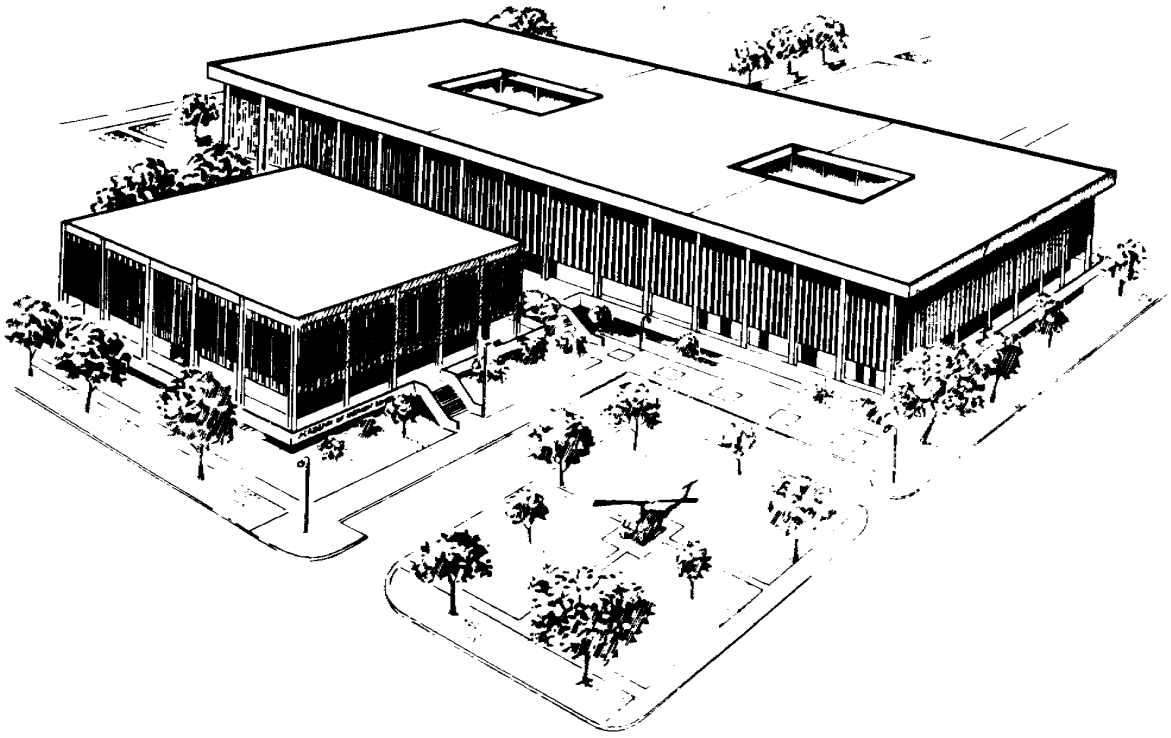
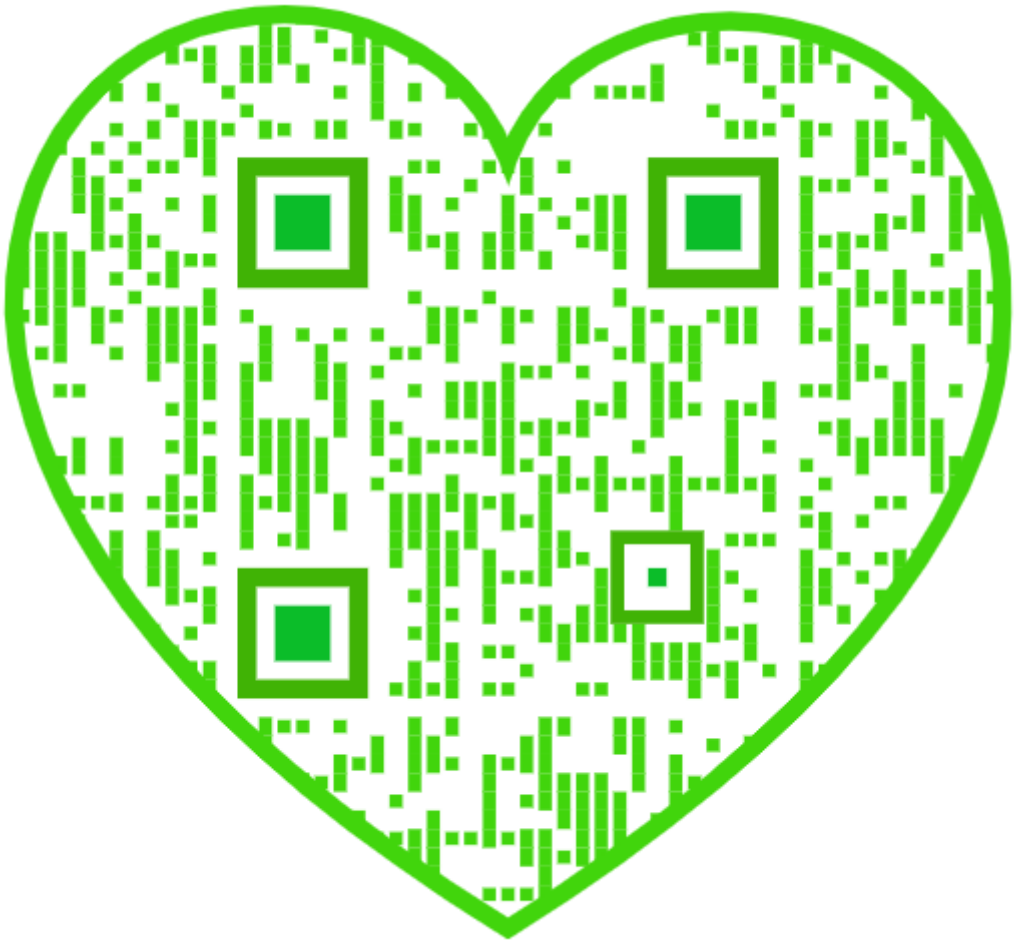


ROUTINE PROCEDURES FOR AN OPERATION

SUBCOURSE MD0935 **EDITION 100**



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CORRESPONDENCE COURSE OF
THE U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL

SUBCOURSE MD0935

ROUTINE PROCEDURES FOR AN OPERATION

INTRODUCTION

When you are assigned to scrub or to circulate for an operation, you are expected to perform a series of tasks in the manner established by local policy and in the order prescribed. These tasks begin with the preparation for the surgical procedure and continue until the case is finished and the cleanup of the room is complete.

The tasks are done so as to protect the sterile setup, to prevent fires and explosions, and to expedite the surgical procedure. The underlying purpose of all the tasks is to afford maximum protection to the patient while rendering the best care possible.

Study of the text will enable you to familiarize yourself with the tasks you should perform when assigned to scrub or to circulate for surgery. You will enhance your skill and proficiency in the performance of these tasks by doing them under competent supervision.

Subcourse Components:

This subcourse consists of four lessons and an examination. The lessons are:

Lesson 1. Introduction to the Operating Room

Lesson 2. Cleaning the Operating Room Suite

Lesson 3. Preparation of the Operating Room for Surgery

Lesson 4. Procedures During and Following Surgery

Credit Awarded:

Upon successful completion of this subcourse, you will be awarded 10 credit hours.

Materials Furnished:

Materials provided include this booklet, an examination answer sheet, and an envelope. Answer sheets are not provided for individual lessons in this subcourse because you are to grade your own lessons. Exercises and solutions for all lessons are contained in this booklet. *You must furnish a #2 pencil*.

Procedures for Subcourse Completion:

You are encouraged to complete the subcourse lesson by lesson. When you have completed all of the lessons to your satisfaction, fill out the examination answer sheet and mail it to the U.S. Army Medical Department Center and School along with the Student Comment Sheet in the envelope provided. *Be sure that your name, rank, social security number, and return address are on all correspondence sent to the U.S Army Medical Department Center and School*. You will be notified by return mail of the examination results. Your grade on the exam will be your rating for the subcourse.

Study Suggestions:

Here are suggestions that may be helpful to you in completing this subcourse:

--Read and study each lesson carefully.

--Complete the subcourse lesson by lesson. After completing each lesson, work the exercises at the end of the lesson, marking your answers in this booklet.

--After completing each set of lesson exercises, compare your answers with those on the solution sheet, which follows the exercises. If you have answered an exercise incorrectly, check the reference cited after the answer on the solution sheet to determine why your response was not the correct one.

--As you successfully complete each lesson, go on to the next. When you have completed all of the lessons, complete the examination. Mark your answers in this booklet; then transfer your responses to the examination answer sheet using a #2 pencil.

Student Comment Sheet:

Be sure to provide us with your suggestions and criticisms by filling out the Student Comment Sheet (found at the back of this booklet) and returning it to us with your examination answer sheet. Please review this comment sheet before studying this subcourse. In this way, you will help us to improve the quality of this subcourse.

LESSON ASSIGNMENT

LESSON 1	Introduction to the Operating Room.
TEXT ASSIGNMENT	Paragraphs 1-1 -- 1-5.
LESSON OBJECTIVES	After completing this lesson, you should be able to:

1-1. Identify terms and their definitions that are related to surgery.

1-2. Identify aseptic technique terms and definitions.

1-3. Identify sources of contamination which must be controlled in the operating room.

SUGGESTION After completing the assignment, complete the exercises at the end of the lesson. These exercises will help you to achieve the lesson objectives.

LESSON 1

INTRODUCTION TO THE OPERATING ROOM

1-1. GENERAL

a. In carrying out the many tasks necessary for a day's surgery, operating room (OR) specialists must coordinate their work to provide a safe and efficient environment for the patient. Lack of coordination (or teamwork) results in errors, misunderstandings between personnel, and waste of time. In view of the nature of the care given the patient in the operating room, any of these results may have dire consequences for the patient.

b. Professional personnel are responsible for developing a systematic method (work plan) for operative procedures. Operating room specialists, under the supervision of professional nurses and the noncommissioned officer in charge (NCOIC), are responsible for learning and acquiring optimum skill in performing their tasks in accordance with the methods that have been developed. The enlisted operating room specialist should be aware of his area of responsibility and should realize that each step or detail in a procedure is important. Methods for performing procedures vary among operating room suites, but the rules for observing aseptic technique and the duties of the circulator and the scrub discussed in this text are basic to every operative procedure. The operating room specialist may be assigned to perform duties as the circulator or the scrub during a surgical procedure.

1-2. DEFINITIONS

An important part of your duties as an operating room specialist is your ability to communicate with the professional staff in the operating room, other operating room specialists, and the support staff for the operating room. Understanding the use and meaning of terminology used within the operating room is an important part of this subcourse. Some of the words listed in the following paragraphs have been defined in previous subcourses, but are included to refresh your operating room vocabulary.

a. **Anesthesia.** General or local insensibility to pain and other sensation induced by certain drugs.

b. **Anesthetist.** One who administers anesthetics. This person may be a nurse anesthetist or a physician anesthesiologist.

c. **Antisepsis.** The prevention of sepsis by the exclusion, destruction, or inhibition of growth or multiplication of microorganisms from body tissues and fluids.

d. **Antiseptics.** Chemical agents that fight sepsis by inhibiting growth of microorganisms without necessarily killing them; used only on living tissue.

e. **Asepsis.** The absence of microorganisms that cause diseases.

f. **Aseptic Technique.** The method by which contamination with microorganisms is prevented. Also called "sterile technique."

g. **Autoclave.** A sterilizing apparatus that uses saturated steam under pressure.

h. **Bacteria.** One category of microorganisms. Microorganisms are of great concern to hospital personnel because they are difficult to destroy and produce many different diseases.

i. **Bagged.** Method of enclosing supplies and equipment. This may be done by plastic or paper to prevent the spread of infection or to maintain sterility.

j. **Circulator.** The technician on the operating room team who functions outside of the sterile field during surgery.

k. **Contaminated.** Soiled with microorganisms.

l. **Cross Contamination.** Transmission of microorganisms from patient to patient and from contaminated objects to patients and vice versa.

m. **Detergent.** A cleansing agent that facilitates removal of grease or soil. A suitable detergent must be selected; it must clean but not injure the surface of the article.

n. **Disease.** A condition in which there is incorrect or poor functioning of any part, organ, or system of the body.

o. **Disinfectant.** An agent that kills all growing forms of microorganisms, thus completely eliminating them from objects; used only on inanimate objects.

p. **Disinfection.** The chemical or physical process of destroying all pathogenic microorganisms except spore-bearing ones. Disinfectants are used on objects--not on tissue.

q. **Disposables.** Commercially prepackaged, usually pre-sterilized items, designed for one-time use.

r. **Draping.** The procedure of covering the patient and surrounding areas with a sterile barrier to create and maintain an adequate sterile field during an operation. Drapes include towels and sheets and may be disposable.

s. **Germ.** A common term for a microscopic or submicroscopic organism capable of producing disease.

t. **Hopper.** A large utility sink equipped with a flushing device. Used to dispose of contaminated waste.

u. **Infection.** Invasion of the body by pathogenic microorganisms and the reaction of tissues to their presence.

v. **Microorganisms.** Living organisms that cannot be seen with the naked eye, including bacteria, fungi, viruses, yeasts, and molds; also called "microbial life."

w. **Procedure.** A particular way of doing something; a series of steps followed in a definite order; a traditional way of doing things.

x. **Process.** A series of procedures designed to prepare supplies and equipment for use in giving patient care.

y. **Principle.** The basis upon which the correct way of doing something is determined. A reference to the principles or procedures that leads to the right way of doing something.

z. **Sanitation.** A process whereby microorganisms present on an object are reduced in number to a level considered safe for human use.

aa. **Sanitizer.** An apparatus employing a sanitizing agent such as hot water, steam, or chemicals.

bb. **Scrub.** The technician on the operating room team who scrubs, dons sterile gown and gloves, and functions within the sterile area.

cc. **Sepsis.** Invasion of the body by pyrogenic microorganisms.

dd. **Sponge.** A sterile surgical dressing of absorbent material for wiping or absorbing blood or other fluids during an operation.

ee. **Sponge, Radiopaque.** This type of sponge has multiple layers of absorbent gauze with a radiopaque thread sewn in. It is used to control bleeding during all types of surgery.

ff. **Sterile.** Free of microorganisms (bacterial, spores, and germs invisible to the naked eye).

gg. **Sterile Field.** The area of the operating room that immediately surrounds and is especially prepared for the patient. To establish the sterile field, all items needed for the operation are sterilized and only sterile team members function within the sterile area.

hh. **Sterilizer.** Apparatus using saturated steam under pressure, ethylene oxide, or dry heat as the sterilizing agent. These include gravity and mechanical types.

ii. **Sterilization.** The process by which all pathogenic and nonpathogenic microorganisms, including spores, are killed.

jj. **Surgical Procedure.** A set of steps by which a desired result is accomplished by surgery, which is the treatment of diseases and injuries by manual or operative methods.

kk. **Surgical Team or Operating Room Team.** Surgeon, one or more assistant surgeons, a scrub nurse or technician, an anesthetist, and a circulating nurse or technician makes up the surgical team.

ll. **Surgical Needles.** Surgical needles are straight or curved needles used to safely carry suture material through tissue with the least amount of effort. Needles must also be sterile.

mm. **Surgically Clean.** Mechanically or physically cleaned, but unsterile. Items are rendered surgically clean by the use of chemical, physical, or mechanical means that reduce the number of microorganisms on them.

nn. **Suture (verb).** Suturing is the act of sewing by bringing tissues together and holding them until healing has taken place.

oo. **Suture (noun).** A suture is any strand of material used to sew tissue together. Suturing material must be sterile. Ligature is a strand of suture material used to "tie off" or seal blood vessels to prevent bleeding.

pp. **Suture Card or Surgeon's Preference Card.** This card lists the surgeon's usual suture and needle routine by tissue layer and preference for instrument equipment and position of patient.

qq. **Terminal Sterilization and Disinfection.** The procedures carried out for the destruction of pathogens on instruments and supplies before they are handled for complete cleaning and checked for proper functioning. Terminal sterilization is often done by the using unit to protect personnel handling the items.

1-3. PURPOSE AND SCOPE OF THE SUBCOURSE

a. **Procedures Performed for an Operation.** Procedures to be done before, during, and after surgery by both the circulator and the scrub are set forth to acquaint the operating room specialist with the precise areas of responsibility of these two assignments. Emphasis is placed upon the fact that the duties of the circulator and the scrub do not overlap once the sterile preparation for surgery has been started. Neither the circulator nor the scrub may intrude upon the other's area at any time, although it is

very important that they consult with each other and that each is aware of what the other is doing.

(1) The surgical team is a group of people in the operating room during a surgical procedure. This group includes the surgeon and one or more assistants (depending on the complexity of the case), the anesthetist, the registered nurse or specialist performing the scrub duties, and the registered nurse or specialist performing the circulating duties. All team members work together to provide the best possible care to the patient. Every job performed in the operating room, no matter how small, contributes to the welfare of the patient. No job is so important that it alone accounts for the recovery of the patient.

(2) Subcourse MD0923, Introduction to the Operating Room, describes the duties of each member of the operating room team. As an operating room specialist, you may be assigned duties directly related to the performance of an operation as the scrub or as the circulator or you may be assigned to the workroom, the instrument room, the anesthesia section, or any other area within the surgical suite. This subcourse will focus on the duties of the operating room specialist functioning as a scrub or as a circulator.

NOTE: The OR specialist can enhance his knowledge concerning his duties during the performance of surgery by applying himself to study the material presented in this text. For the acquisition of skill, the OR specialist MUST PRACTICE performing the duties using the appropriate techniques. The OR specialist MUST HAVE A QUALIFIED PERSON observe his practice until he has mastered the necessary skills and techniques.

b. **Cleanup Following Surgery.** Methods for cleaning the operating room after surgery are also set forth. More specific guidelines should be outlined in the standing operating procedures (SOPs) of each institution.

1-4. ASEPTIC TECHNIQUE

a. **General.** The term "asepsis" means the absence of any infectious agents. All things that come into contact with a wound should be free from all microorganisms (sterile or as free as possible) for the protection of the patient. In order for the operating room specialist to understand the reason for doing many procedures in a certain way, he needs to know the principles of aseptic technique. These principles serve as a guiding factor in the performance of all tasks in a surgical suite, including the routine cleaning or housekeeping procedures.

b. **Importance.** Aseptic (sterile) technique is essential in an operating room. Sterile technique is of such great importance that it may be abandoned only during an event such as cardiac arrest in a patient where immediate action makes the difference between life and death. Even when cardiac arrest occurs, the decision to sacrifice sterile technique is the surgeon's; the enlisted OR specialist should never abandon

sterile technique except upon order by the surgeon. Such strictness in the maintenance of sterile technique is necessary because freshly-cut, living tissue can become infected easily. Therefore, it is essential that the OR specialist and all other members of the OR team know the common sources of microorganisms in an operating room and the means by which these organisms reach the sterile field to contaminate it. Also, team members must know how to prevent contamination of a sterile field.

c. **Responsibility for Maintenance.** The maintenance of sterile technique is the responsibility of everyone having duties or even being in the operating room during an operative procedure. Sterile technique cannot be maintained unless practiced by all team members. Asepsis may be thought of as a chain that is as strong as its weakest link.

d. **"Surgical Conscience" (Knowledge and Application of Principles of Aseptic Technique).** A "surgical conscience" is the foundation upon which the skill and techniques employed by the OR specialist are built. He must know the principles of sterile technique and he must apply them. Breaks in technique may allow the entrance of infectious organisms that the tissues cannot destroy. Even a so-called "mild" infection will delay a patient's recovery and a "mild" infection may quickly become a severe one. Thus, any infection is potentially a threat to the life of a patient. The OR specialist should be acutely aware that there is no substitute for sterile technique and he should, therefore, follow the principles of such technique painstakingly. The specialist, and all other team members, should never be reluctant to admit a possible break in technique, even if there is doubt about it. Any part of the sterile field, including the sterile gowns and gloves of team members, should be replaced with fresh, sterile items if any doubt arises as to their sterility.

e. **Sources of Contamination.** In order to control infection, there must be control over the sources of contamination. Bacteria are present in the air, water, food, man-made objects, skin, mucous membranes, nose, throat, and soil. In the operating room, there are specific sources of possible contamination that are a constant threat to an open incision. They should be recognized as such and controlled. These sources are:

(1) Members of the operating room team (their dress, breath, skin, etc.).

(2) The patient.

(3) All items used in the wound and on the sterile setup.

(4) Dust in the air.

(5) Other personnel in the operating room.

1-5. PRINCIPLES OF STERILE TECHNIQUE

a. The principles of sterile technique are applied in various ways. In the following paragraphs, the principles of sterile technique and examples of their application are discussed. When the OR specialist understands the principles, he should be aware of other examples of their application.

b. All materials used as a part of the sterile field for an operation must be sterile. Certain basic items (such as the linen, the instrument set, and the basins) may be obtained from the supply kept in the sterile supply room. Others, such as specialized surgical instruments, may be sterilized the night before or immediately preceding the operation and taken directly from the sterilizer to the sterile operative field. Once an item is removed from a sterile wrapper, it must be used or discarded.

(1) Linen used in the operating room is usually dyed green. This helps to reduce the glare from lights, thus reducing fatigue and eyestrain.

(2) Linen selected for use in the operating room should be checked to ensure that the linen is not torn or frayed and that no holes are present in the cloth. Likewise, it should be handled gently to prevent lint and dust from being spread about the room.

(3) Only materials known to be sterile should be used and their sterility should be maintained throughout the operative procedure.

(4) Sterile areas are set up just prior to use.

(5) Scrub attire should not be worn outside the surgical suite.

(6) All team members should wash hands before and after the care of each patient.

c. Items should be considered unsterile if there is doubt about their sterility.

(1) If a sterile-appearing package is found in an area not designated for sterile storage, it is considered unsterile and must be reprocessed and re-sterilized.

(2) If there is doubt about the timing of a sterilizer, its contents are considered unsterile.

(3) If an "unsterile" person brushes close to a sterile table, the table is considered contaminated. Also, if a "sterile" person brushes close to an unsterile table, the person's sterile gown is considered contaminated.

(4) If a sterile table or sterile items are left unmonitored, the table and items are considered unsterile.

(5) Do not drop or place **clean supplies** on the floor. Do not drop or place **used supplies** or **soiled linen** on the floor.

d. Only the top surface of a draped table is considered sterile. Anything extending over the edge or hanging over the edge is not sterile.

(1) Linen or sutures falling over the edge of the table should be discarded. The scrub should not touch the part hanging below the table level.

(2) When the scrub drapes a table with sterile linen, he should see that the part of the linen that drops below the table's surface is not brought up to table level again.

e. Once again, neither the circulator nor the scrub may intrude upon the other's area at any time, although it is very important that they consult with each other and that each is aware of what the other is doing. The duties performed by the scrub and by the circulator are governed by specific procedural rules. Persons who are "sterile" touch only sterile articles; "unsterile" persons touch only unsterile items. All supplies for the "sterile" team members (scrub, surgeon, and assistants) are provided by the circulator ("unsterile" team member) who protects the sterility of items through the use of the wrappers on sterile packages (see Figure 1-1). These procedures are described in paragraphs f and g below.

NOTE: In Figure 1-1, observe how the circulator handles the sterile wrapper and the distance he stands from the sterile field.

f. The scrub is considered a “sterile” person.

(1) The “sterile” personnel gowns and gloves without touching the outside of the gown or gloves with his bare hands.

(a) If a "sterile" team member's glove is punctured during an operation, the glove is to be changed at once.

(b) If the glove is pricked by a needle or an instrument, the needle or instrument is discarded from the sterile field. Notify the circulator of the needle's whereabouts.

(2) The parts of a surgical gown (see Figures 1-2 and 1-3) considered sterile are the sleeves (except for the axillary area) and the front of the gown from table level to a few inches below the neck opening.

(3) The scrub sets basins or glasses to be filled at the edge of the sterile table opposite where he stands. The circulator stands near the edge of the table to fill them.

Figure 1-1. Scrub reaching for sterile supplies

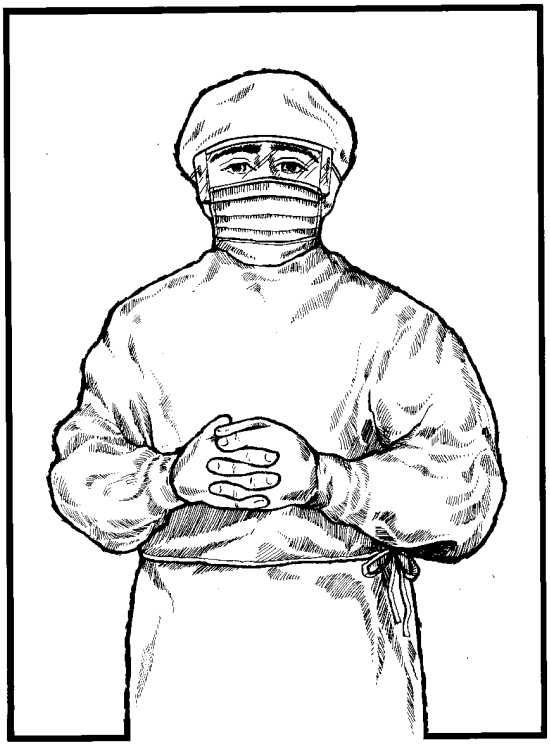


Figure 1-2. Scrub attire (front view).

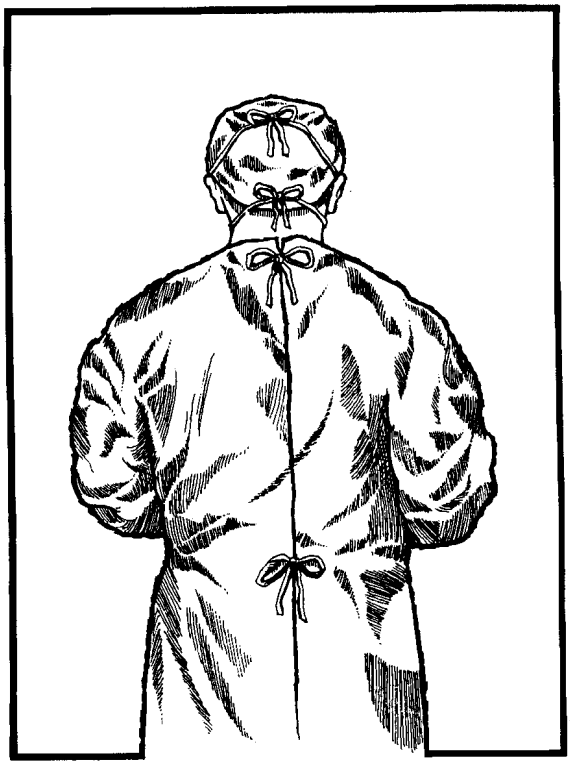


Figure 1-3. Scrub attire (back view).

(4) A "sterile" team member turns away from the sterile field to have perspiration mopped from his brow.

(5) The scrub drapes the part of an unsterile table nearest himself first.

(6) A "sterile" person should keep his hands in sight and at waist level or above.

(7) A "sterile" person should keep his hands away from his face and his elbows close to his sides. He should never fold his arms because his gown may be moist with perspiration in the axillary (under arms) region; thus, his gloves would become contaminated. When a "sterile" person stands on a footstool, the lower part of his gown should not brush the sterile table. (Common sense determines sterile parts of a gown worn by tall and short members in relation to their waists and the tops of sterile tables.)

(8) "Sterile" team members should keep their contact with sterile areas to a minimum.

(a) "Sterile" team members should not lean on the sterile tables or on the draped patient.

(b) The scrub should keep the large instrument table (back table) and the Mayo stand far enough away that the gowns of other "sterile" team members do not brush them.

(9) "Sterile" team members keep well within the sterile area. The scrub should allow a wide margin of safety when passing unsterile areas. He and all other "sterile" team members should observe the following practices.

(a) "Sterile" team members should stand back at a safe distance from the operating table while draping the patient.

(b) "Sterile" team members should pass each other back to back.

(c) A "sterile" team member should turn his back to an "unsterile" person or area when passing.

(d) A "sterile" team member should face a sterile area when passing.

(e) "Sterile" team members should stay near the sterile table. They should not wander about the room nor go out into the corridor.

(f) When used items or soiled sponges are placed into a basin and maintained on the sterile field, the inside of the basin is contaminated. Handle such a basin by the outside only.

g. The circulator is considered the “unsterile” member of the surgical team.

(1) An "unsterile" team member should never crowd past a "sterile" team member or field. Allow sufficient space between you and the sterile field or between you and gowned individuals when passing them.

(a) "Unsterile" team members should keep away from sterile areas. "Unsterile" persons should allow a wide margin of safety when passing sterile areas.

(b) "Unsterile" persons should face a sterile area when passing it to be sure you have not touched it.

(c) In addition, "unsterile" persons should not go within the sterile "circle" or between two sterile fields.

(d) When passing behind a gowned team member, always notify him to avoid possible contamination of his sterile attire if he should turn or move back and brush you.

(2) The circulator stands at a safe distance from the sterile field when adjusting the light over it.

(a) Never reach across a sterile field. Stand outside the sterile field and hold the extra supplies needed; allow the scrub to reach for them. Do not enter the sterile field to perform any duties.

(b) When moving a sterile table, grasp the table legs well below the tabletop and underneath the sterile drapes.

(c) The circulator "flips" the sterile suture material onto back table (see Figure 1-4).

h. The edge of a cover that encloses sterile contents is not considered sterile. Such covers include the edges of wrappers on sterile packages, the caps on solution bottles, and test tube covers. No definite line separates the sterile from the unsterile area at the edge of the cover; therefore, the edge is considered unsterile.

(1) The scrub should lift contents from packages by reaching for them with the arm straight out and lifting the items straight up -- with the elbow held high throughout the procedure.

(2) The circulator lifts the cap from a solution bottle so that the edge of the cap never touches the lip. Caps are not replaced. The entire contents are dispensed and any excess solution is discarded.

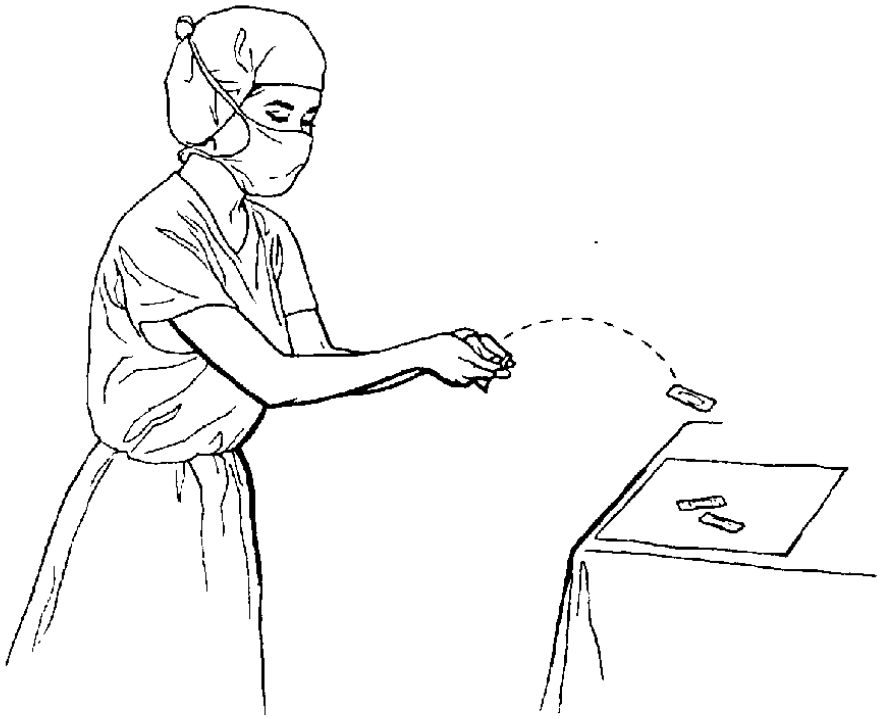


Figure 1-4. Circulating nurse "flipping" sterile suture material from a suture packet onto the back table.

i. Sterile areas should be protected from moisture because a moist item may become contaminated. When moisture soaks through a sterile area to an unsterile one, or vice versa, a means of transporting infectious organisms to the sterile area is provided. Therefore, the OR specialist should observe the following rules of practice.

(1) Sterile packages should be laid on dry areas.

(2) If any portion of a sterile package becomes damp or wet, the entire package should be discarded.

(3) If a sterile package falls on the floor, it is considered unsterile.

(4) Linen packages from the sterilizer should be permitted to cool before being stored on shelves. This procedure prevents their becoming damp from steam condensation when placed on a cool shelf.

(5) Sterile drapes should be placed on a dry surface. (Thus, time should be allowed for the prep solution used to paint the patient's skin to dry before draping is begun.)

(6) During surgery, if a solution soaks through a sterile area from an unsterile one or through an unsterile area from a sterile one, the wet area should be covered with another sterile drape.

j. Whenever microorganisms cannot be eliminated from a field, they should be kept to an absolute minimum. Although absolute asepsis in an operative field cannot be reached, every effort is made to control sources of possible contamination.

(1) Skin cannot be sterilized. Skin normally harbors staphylococcus and other organisms; however, any agent capable of sterilizing skin will also destroy it. The skin of the patient, as well as that of members of the "sterile" team, is therefore a potential source of contamination in every operation. However, this does not remove the need for strict aseptic technique. Defenses within the patient's body will usually overcome the relatively few organisms left on the skin when the following protective measures are carried out.

(a) The patient's skin is given a shave and scrub just prior to surgery and is again thoroughly cleansed in the operating room just prior to the incision.

(b) As much of the operative area is cleansed as is feasible and the surrounding skin is scrubbed.

(c) Some areas cannot be scrubbed vigorously. Mucous membranes are gently prepped since scrubbing would damage the tissue. When the site of operation is the mucous membrane of the nose, mouth, throat, or anus, the number of microorganisms present is great. However, these parts of the body do not usually become infected by organisms that normally inhabit them.

(d) When scrubbing the patient's skin, a sponge is used only once for prepping an area. Once the sponge is removed from contact with the skin, the sponge is discarded into a kick bucket.

(e) All of the patient's skin area except the site of incision is covered with sterile drapes.

(f) Sterile towels or other sterile material may be used to cover the skin after the incision is made. The reason for this additional precaution is to protect the surgical wound from the waste products continually excreted by the skin. In addition, airborne organisms continuously pose a threat of contaminating the incision.

(g) When the knife used for the skin incision is no longer needed, the scrub isolates it from other items on the sterile field.

(h) The skin of operating room personnel is another source of contamination. They follow rigid steps in scrubbing their hands and arms using brushes and detergents and adhering to strict technique. This is done to remove the maximum number of organisms. When drying their hands, sterile hand towels should not touch their scrub clothes.

(2) The cap worn on the head of team members should completely cover the hair to prevent particles of dandruff or hair from falling on the sterile field or in the room.

(3) Infected areas are grossly contaminated. All team members should avoid scattering the contamination.

(4) The air is usually contaminated by dust and droplets.

(a) Team members are required to wear a mask covering the nose and mouth during an operative procedure. The mask must cover the mouth and nose entirely and be tied securely to prevent venting. The strings should not be crossed when tied because the sides of the mask will gap. A pliable metal strip is inserted in the top hem of most masks to provide a firm contour fit over the bridge of the nose. This strip also helps prevent fogging of eyeglasses. Air should pass only through the filtering system of the mask. Masks should be either on or off. They should not be saved from one operation to the next by allowing them to hang around the neck or by tucking them into a pocket. Bacteria that have been filtered by the mask will become dry and airborne if the mask is worn necklace fashion. By touching only the strings when removing the mask, contamination of the hands will be reduced. Masks should be changed between procedures and sometimes during a procedure, depending on the length of the operation and the amount of talking done by the surgical team.

(b) When possible, the respiratory tract of the patient should be isolated from the incision. In some cases, isolation is achieved by using the anesthesia screen. This serves as a barrier between the incision and the respiratory tract.

(c) Team members should not talk except when essential. Silence is even better than masking to reduce the number of organisms spread from nose and throat.

(d) Team members should avoid sneezing and coughing.

(e) Persons who have colds or any active infection should be excluded from the operating room.

(f) Main corridors are considered to be contaminated areas; therefore, doors from corridors into the operating rooms should be kept closed. Also, sterile items without wrappers should not be carried through corridors.

(g) Walking through and around the operating room should be kept to the necessary minimum.

(h) All dusting should be damp-dusting with a germicide solution. Floors should be wet-vacuumed between cases as well as at the end of the day. Dry-

dusting and dry-mopping should be avoided in the operating room since the dust created by these methods would continue to settle or float in the room for hours.

(i) The bedclothes over the patient should be handled gently when he is being transferred to the operating table in order to avoid throwing lint off into the air. Local policy may require bedclothes to be removed/replaced prior to the entry in the operating room; nevertheless, the patient should be covered with a cover sheet at all times.

(j) Dressings removed from a wound should be placed at once in a bag and the bag should be closed and discarded. Drainage that is left exposed to the air may become dried, thus enabling the infectious organisms in it to become airborne and be carried to other parts of the surgical suite and the hospital to infect others.

Continue with Exercises

EXERCISES, LESSON 1

INSTRUCTIONS: The following exercises are to be answered by marking the lettered response that best answers the question or best completes the incomplete sentence or by writing the answer in the space provided.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers.

1. A set of steps by which a desired result is accomplished by surgery is known as: _____

2. _____ is the general or local insensibility to pain and other sensation induced by drugs.

3. Which technician on the OR team is sterile? _____

4. What is the procedure called for covering the patient and surrounding areas with a sterile barrier? _____

5. Which technician on the operating room team functions outside of the sterile field during surgery? _____

6. Suture, used as a noun, is defined as _____ .

7. Who provides the supplies required by a "sterile team"?

   a. NCOIC.

   b. Scrub.

   c. Circulator.

   d. Assistant surgeon.

8. Which of the following statements is accurate as a principle of aseptic technique?

   a. Sterile packages are to be opened toward the body.

   b. If part of an article is unsterile, use only the sterile part.

   c. An article removed from a sterile wrapper, even if unused, is to be discarded.

   d. The outside wrapper around sterile goods is to be touched by the gloved hands only.

9. The circulator and the scrub must know all the procedures to be done before, during, and after surgery by each of them so that they can:

   a. Be aware of what the other is doing at all times.

   b. Relieve each other during breaks in the procedure.

   c. Brief the patient on what will be done in the procedure.

   d. Substitute for each other during the procedure, if necessary.

10. Knowing and applying principles of aseptic or sterile technique is known as _____ .

11. The process by which all pathogenic and nonpathogenic microorganisms, including spores, are killed is known as _____.

12. Sources of contamination in the operating room are:

_____
_____
_____
_____
_____
_____

13. A microscopic organism capable of producing diseases is commonly called a(n) _____ .

14. _____ is a process whereby microorganisms present on an object are reduced in number to a level considered safe for human use.

15. _____is the absence of microorganisms that cause diseases.

16. The area of the operating room that immediately surrounds and is especially prepared for the patient is _____.

17. Invasion of the body by pathogenic microorganisms and the reaction of tissue to their presence is known as _____.

SPECIAL INSTRUCTIONS. In exercises 18 through 22, match the following words with the correct definition by writing the letter of the correct definition in the space by the term.

18. ____ Suture (verb)

19. ____ Sponge

20. ____ Operating room team

21. ____ Procedure

22. ____ Autoclave

a. A sterile surgical dressing of absorbent material for wiping or absorbing blood or other fluids during an operation.

b. Surgeon, scrub technician, anesthetist, and circulating technician.

c. Act of sewing by bringing tissues together and holding them until healing has occurred.

d. A sterilizing apparatus.

e. A particular way of doing something; a set order

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 1

1. Surgical procedure (para 1-2jj)

2. Anesthesia (para 1-2a)

3. Scrub (para 1-2bb)

4. Draping (para 1-2r)

5. Circulator (para 1-2j)

6. Any strand of material used to sew tissue together. (para 1-2oo)

7. c (para 1-5e)

8. c (para 1-5b)

9. a (paras 1-3a; 1-5e)

10. Surgical conscience (para 1-4d)

11. Sterilization (para 1-2ii)

12. Members of the OR team.
    The patient.
    Items used in the wound.
    Items in the sterile setup.
    Dust in the air.
    Other personnel in the operating room (para 1-4e)

13. Germ (para 1-2s)

14. Sanitation (para 1-2z)

15. Asepsis (para 1-2e)

16. Sterile field (para 1-2gg)

17. Infection (para 1-2u)

18. c (para 1-2nn)

19. a (para 1-2dd)

20. b (para 1-2kk)

21. e (para 1-2w)

22. d (para 1-2g)

End of Lesson 1

LESSON ASSIGNMENT

LESSON 2	Cleaning the Operating Room Suite.
TEXT ASSIGNMENT	Paragraphs 2-1 – 2-5.
LESSON OBJECTIVES	After completing this lesson, you should be able to:

2-1. Identify the types of cleaning to be performed in the operating room suite.

2-2. Identify the procedures performed to clean the operating room suite.

SUGGESTION After completing the assignment, complete the exercises at the end of the lesson. These exercises will help you to achieve the lesson objectives.

LESSON 2

CLEANING THE OPERATING ROOM SUITE

2-1. GENERAL

Definite cleaning procedures are established by the operating room supervisor for cleaning the operating rooms to ensure a safe, clean area for the patient and the staff. Cleanup procedures must be rigidly followed to contain and confine organisms, known and unknown, in order to prevent contamination of the entire suite. Local SOPs must be checked for specific procedures.

2-2. INITIAL CLEANING

a. Damp dust surgical lights and reflectors with disinfectant solution. Dry with a clean dry cloth.

b. Damp wipe all furniture, to include the back table, prep table, ring stands, Mayo stands, and operating table, with disinfectant solution.

c. Clean the wet vacuum as necessary.

2-3. BETWEEN CASE CLEANING

a. Gather all litter from floors and deposit in waste containers.

b. Collect all linen, dispose of in appropriate hamper bags for the laundry.

NOTE: Dispose of linen from open packs, whether soiled or not, in the proper linen hamper. If linen is wet or heavily soiled, double the bag.

c. Discard any soiled sponges, suction canisters, tubing, and other waste as infectious waste as per local SOP.

d. Depending upon local SOP, the contamination of the floor, and the procedures involved, the floor may need to be cleaned between cases. Move the operating table to the periphery of the room. Flood the floor surface for three to four feet around operative side with disinfectant solution. The area of flooding will be extended to include any spillage or contamination as necessary.

e. Damp wipe the operating table with disinfectant solution, removing all blood and soiled materials. Remake the operating table.

f. Damp wipe all furniture, back table, Mayo stands, ring stands, X-ray view boxes, suction bovie, kick buckets, and scrub sinks. Roll casters and wheels of furniture through disinfectant solution on the floor.

g. Spot clean walls and ceilings, if necessary.

h. Damp wipe overhead lamps; dry with clean dry cloth.

i. Replace linen hamper bags and trash liners.

j. Pick up disinfectant solution from floor using wet vacuum.

k. Strip litters after each use and damp wipe with disinfectant solution. Remake litters with clean sheets.

2-4. END OF DAY CLEANING

a. Properly bag, seal, and remove soiled linen to collection points.

b. Scrub all furniture with disinfectant solution. Clean wheels and casters of all debris.

c. Damp wipe all wall mounted equipment, wipe dry with clean dry cloth.

d. Wipe all kick buckets, racks, and waste receptacles with disinfectant solution.

e. Wipe doors of cabinets and room door, especially around handles and push plates, and restock supply cabinets.

f. Take off and clean the operating table cushions and removable pads. Remake the operating table.

g. Replace all linen hamper bags and trash liners.

h. Scrub all sinks with disinfectant solution.

i. Flood floor with disinfectant solution and pick up with wet vacuum.

j. Return all equipment and furniture to the proper area.

k. Clean the wet vacuum as necessary.

2-5. TERMINAL CLEANING

A terminal, or thorough, cleaning routine may be performed in addition to the end of day cleaning. Some areas may be overlooked if schedules were not done. Terminal cleaning is sometimes referred to as deep cleaning.

a. Move all removable equipment and furniture to the hallway or opposite side of the room.

b. Scrub all kick buckets and racks.

c. Vacuum air conditioner grills.

d. Clean all shelves and cabinets.

e. Damp wipe with disinfectant solution all overhead lights.

f. Wash wall surfaces with disinfectant solution.

g. Damp wipe all furniture and equipment to include wheels and casters.

h. Empty all soap dispensers, change tubing, disassemble foot pedals, and clean dispensers and foot pedal. Refill dispensers and reassemble foot pedal.

i. Remove the operating table cushions and removable pads. Scrub cushions and pads in sink. Thoroughly clean the entire operating table. Remake the operating table.

j. Scrub all sinks with disinfectant solution.

k. Flood floor with disinfectant solution, machine scrub, pick up solution with vacuum.

l. Return all furniture and equipment to room when floor has dried.

Continue with Exercises

EXERCISES, LESSON 2

REQUIREMENT: The following exercises are to be answered by completing the incomplete statement and listing information in the blank spaces provided.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers.

1. What type of solution is used to damp dust the surgical lights and reflectors?
   _____

2. What is used to pick up the solution after flooding the floor?
   _____

3. The thorough cleaning of the surgical area of the OR suite, also referred to as _____ or deep cleaning, is done on a routine schedule in addition to the daily cleaning.

4. List the four types of cleaning performed in the operating room suite.

   _____

   _____

   _____

   _____

SPECIAL INSTRUCTIONS. Exercises 5 through 16 pertain to the operating room suite. Indicate whether the statement pertaining to the cleaning indicated is true or false by placing a "T" for TRUE or "F" for FALSE on the line to the left of the number.

INITIAL CLEANING

__ 5. Mayo stands are never damp dusted.

__ 6. Surgical lights are dusted with a clean, dry cloth.

BETWEEN CASE CLEANING

__ 7. Litter from floors is deposited in waste containers.

__ 8. Walls may be spot cleaned.

END OF DAY CLEANING

__ 9. Scrub furniture wheels and casters with alcohol.

__10. Sinks are scrubbed with disinfectant solution.

__11. After cleaning, place furniture outside of the operating room suite.

__12. Litters are not stripped until the end of the day.

TERMINAL CLEANING

__13. Vacuum air condition grills.

__14. Clean all shelves and cabinets.

__15. Wipe all kick buckets and racks.

__16. Clean wet vacuum.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 2

1. Disinfectant (para 2-2a)

2. Wet vacuum (para 2-3j)

3. Terminal (para 2-5)

4. Initial
   Between cases
   End of day
   Terminal
   (paras 2-2, 2-3, 2-4, 2-5)

5. F (para 2-2b)

6. F (para 2-2a)

7. T (para 2-3a)

8. T (para 2-3g)

9. F (para 2-4b)

10. T (para 2-4h)

11. F (para 2-4j)

12. F (para 2-3k)

13. T (para 2-5c)

14. T (para 2-5d)

15. F (para 2-4d)

16. F (para 2-4k)

End of Lesson 2

LESSON ASSIGNMENT

LESSON 3	Preparation of the Operating Room for Surgery.
TEXT ASSIGNMENT	Paragraphs 3-1 – 3-26.
LESSON OBJECTIVES	After completing this lesson, you should be able to:

3-1. Identify the duties and responsibilities of the circulator in preparing the operating room for surgery.

3-2. Identify the duties and responsibilities of the scrub in preparing the operating room for surgery.

SUGGESTION After completing the assignment, complete the exercises at the end of the lesson. These exercises will help you to achieve the lesson objectives.

LESSON 3

PREPARATION OF THE OPERATING ROOM FOR SURGERY

Section I. DUTIES OF THE OPERATING ROOM SPECIALIST AS A CIRCULATOR

3-1. GENERAL

a. Both the circulator and the scrub must study the operating room schedule in detail to enable them to carry out their duties effectively. A discussion of the operating room schedule is presented in Subcourse MD0923, Introduction to the Operating Room, which you should have studied prior to this subcourse.

b. Preliminary preparation of the operating room is done before the patient enters. Cleaning the operating room is part of total patient care and is a cooperative effort involving both the scrub and the circulator, each with separate duties. The division of duties is quite specific, yet the circulator and the scrub must plan their duties so that together the sterile and nonsterile parts of the operation move along together.

c. To work efficiently during a surgical procedure, the circulator must be thoroughly familiar with the established routine in the operating room suite. He must know instruments, equipment, and supplies -- including the supplies needed for positioning the patient -- to enable him to provide the appropriate items. He must also know their location to avoid loss of time in obtaining them. The duties discussed in the following paragraphs are ordinarily performed by the circulator. Additional duties may be assigned to him by the professional members of the operating team. Definite routines are established for the preparation of an operating room for surgery. There may be some flexibility in the order in which these duties are performed, but the sequence given in the following paragraphs is generally used.

3-2. PREPARATION OF THE OPERATING ROOM

a. The circulator should check the operating room schedule the day before surgery for any changes that may have been made. The operating room specialist should be in the assigned room in plenty of time to prepare for the surgical procedure. Centralized Materiel Service should be notified of any special equipment and/or instruments that may be needed for the case that are not readily available.

b. Personal cleanliness is extremely important for the operating room specialist. Before performing the duties described in the following paragraphs for preparation of the operating room, the circulator should wash his hands thoroughly and don a surgical hat. The surgical cap must cover the hair completely to prevent possible contamination of the sterile area by falling hair or dandruff. He should then don a clean, cotton scrub suit before entering the semi-restricted areas of the surgical suite. Before

entering a restricted area, the OR specialist must don a surgical mask per local SOP. The mask protects the patient from bacteria exhaled by operating room personnel. The mask must fit snugly around the nose and mouth to filter the air through it rather than around the sides of the mask. The mask should be changed whenever it becomes damp and after each procedure. The correct procedures for donning scrub suit, surgical hat, shoe covers, and surgical mask are provided in detail in Subcourse MD0933, Scrub, Gown, and Glove Procedures, which you should have studied prior to this subcourse. Now you are ready to prepare the operating room for surgery.

c. Damp dust the operating room unless this has already been done by personnel on the previous shift. Concurrent with dusting, check equipment, arrange furniture, and restock supplies. After damp dusting with a cloth soaked in disinfectant solution prescribed by local policy, wet vacuum the floor using a disinfectant prescribed by local policy. Dry dusting and mopping is never done in the operating room because it raises dust that contains bacteria.

(1) Damp dusting should be done before the first scheduled incision time of the day.

(2) Establish and follow a definite order when damp dusting furniture. Start with the tallest equipment and work down since this method helps the settling of airborne microorganisms. Damp dust the operating room overhead light first, then the operating table. Work from the center of the room to the perimeter (outer limits) and from the tallest item to the lowest. If you are called from the room, leave the damp dusting cloth on the item being dusted; this will serve as the starting point when resuming dusting duties.

(3) As the damp dusting is accomplished, set up the equipment and check each item for proper functioning. This will save time and energy. This includes such things as:

(a) Switch on the overhead light to ensure proper functioning.

(b) Check the operating table for proper working order.

(c) Check the suction machine, the electrosurgical unit, and other pieces of equipment in the operating room whether or not they are to be used.

(d) Line the kick buckets with plastic bags.

(e) Check the supply cabinets for stock. Restock, if necessary.

(4) Consult with the scrub on the arrangement of the furniture for the surgical procedure. In general, the area chosen for the sterile setup should be away from doorways and traffic. It should be in the most closed-in area away from the cabinets that are to be opened during the setup. As damp dusting continues, arrange

the furniture for the sterile setup so that the scrub can work within the sterile field and the circulator can work outside the field.

d. Check with the scrub for any special equipment he may need for the case.

e. If the instruments were not wrapped and sterilized on the preceding shift, ensure that instrument sets are placed in the autoclave.

f. Check that all equipment needed to position the patient is in the room. If not, get the necessary equipment.

g. Discuss with the scrub the sterile supplies needed for the case (be sure to discuss the kind and amount of sutures needed) and then bring the supplies into the room. The surgeon's preference card will list the types and sizes of sutures needed for the procedure.

h. Place sterile goods on the tables or stands where they will be used to avoid having to move them from one place to another. You should place the various sterile items as indicated in (1) through (6) below.

(1) The linen or drape pack on the large instrument table (backtable).

(2) The gown pack on the prep table.

(3) The Mayo tray on the Mayo stand.

(4) The sterile basin set into the ring stand.

(5) The prep set placed on the prep table. Only after the scrub dons the gown and the wrapper is removed,

(6) The instrument set on a ring stand or table.

i. Put sterile packages that the scrub will not need immediately (such as suction tubing and culture tubes) on the utility table and open them after the scrub has prepared a space for them. You may also place on the utility tables supplies needed from the sterile supply cabinets such as knife blades, needles, etc.

j. Do not place sterile supplies on the operating table nor on the anesthetist's equipment (the anesthesia apparatus and the anesthetist's table) because these areas are for the use by the anesthetist only.

k. Open the sterile supplies. Before any sterile supplies are opened, however, the integrity of every package is checked for tears, punctures, watermarks, expiration date, and the sterilization indicator. Tears, punctures, and watermarks on a sterile pack indicate that the supplies are unsafe to use. The sterilization indicator shows whether

the pack has been through the sterilization process. The date of expiration will tell you whether it is too old for safe use. If the package is in any way compromised, it must be discarded and a new pack secured.

l. Open the packs and sets in the order in which the scrub will need them. Open the sterile gown first; the scrub will need this immediately upon entering the room.

(1) Remove the tape from the packages, unwrap the item, and check the indicator tape to ensure item has been through the sterilization process. If the indicator tape shows no or incomplete sterilization process, discard the package and secure a new one.

(2) After opening the pack containing the scrub's gown, open the basin set, the linen pack, the prep set ,and the instrument set.

m. All sterile wrappers are to be removed in the same general manner. Open the wrapper so that your hand and arm do not pass over any part of the inside of the wrapper that has been exposed.

(1) Position the package so that the flaps are on top (Figure 3-1).

(2) Using one hand lift the distal flap up and away from the package (Figure 3-2).

(3) Open the left flap (Figure 3-3).

(4) Open the right flap (Figure 3-4).

(5) Open the near flap (Figure 3-5).

n. Larger sterile supplies can be opened using the wrappers to form a sterile field and are to be opened in the following manner.

(1) With hands on the outside of each wrapper in a folded cuff, always lift the wrapper toward you to avoid contaminating the contents of the pack (see Figure 3-6). The area touched by you under the cuff falls below table level and the inside of the wrapper remains sterile.

(2) Walk around the table as you remove each portion of the wrapper. Do not reach over the inside of the sterile table cover or the contents of the pack.

(3) Stand at arms length from the sterile pack as you lift the wrappers (see Figure 3-7). If a sterile pack falls to the floor, discard it, as it has now become contaminated.

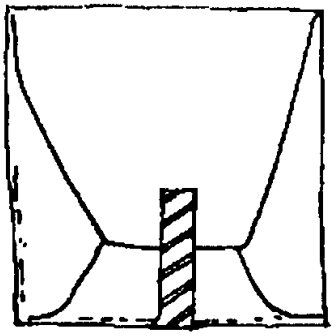


Figure 3-1. Flaps on top.

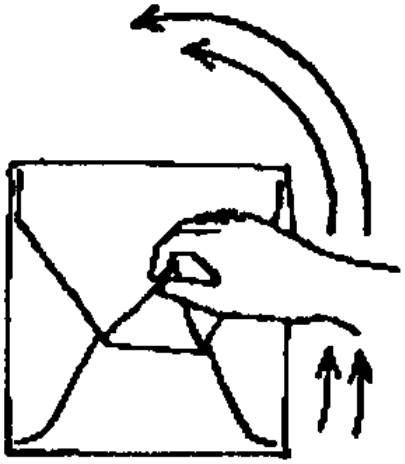


Figure 3-2. Distal flap

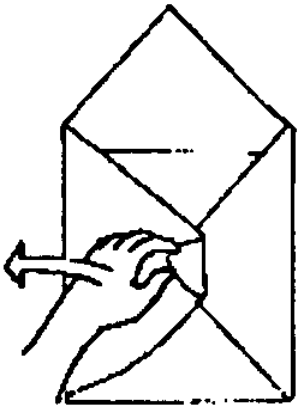


Figure 3-3. Left flap

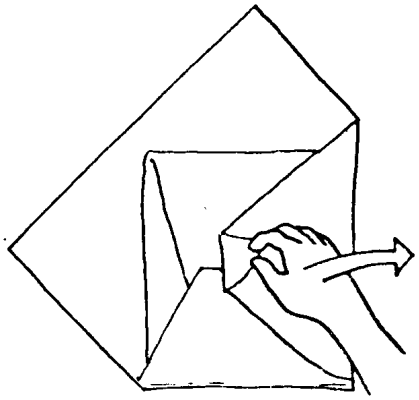


Figure 3-4. Right flap.

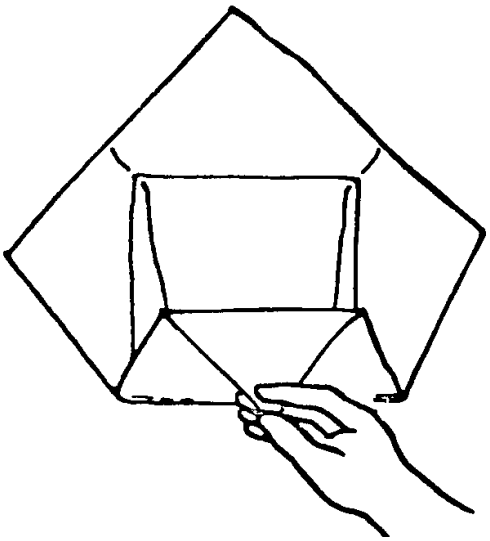


Figure 3-5. Near flap.

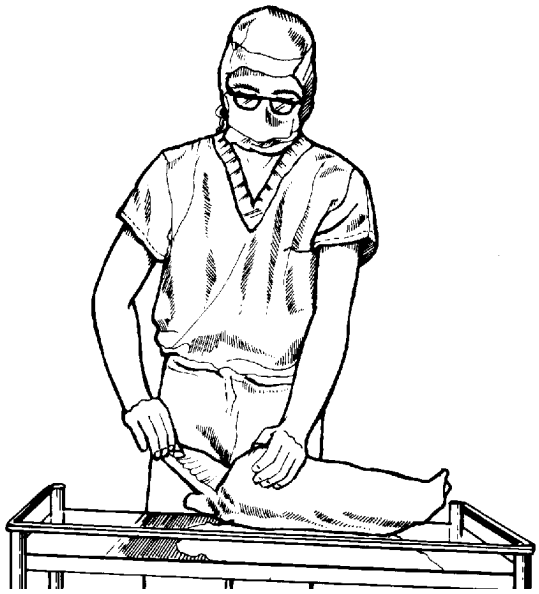


Figure 3-6. The circulator beginning to open a sterile pack.

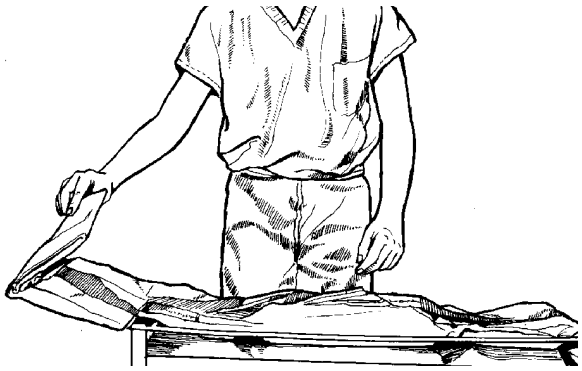


Figure 3-7. The circulator bringing the second fold over the end of the table.

(4) Check the sterilization indicator. If the sterilization indicator in the pack is acceptable, the circulator continues. If the indicator is not acceptable, the pack is discarded and a new pack is opened.

(5) The inside of the wrapper can now be used as a sterile field. The object that was wrapped (such as the scrub's gown, double basin set or back table surgical pack) is now located within a sterile field.

o. Smaller sterile supplies are to be opened and added to the sterile field in the following manner:

(1) Hold the sterile package in one hand with the flaps up. This is done away from the sterile field.

(2) Grasp the outside edges of the sterile wrapper with your free hand. This protects the sterility of package contents.

(3) Unwrap the sterile package (Figure 3-8). Be careful not to contaminate the inside of the wrapper or the sterile object.

(4) Hold edges of sterile wrapper back around your wrist (Figure 3-9) so they will not accidentally drag across sterile field and so the hand supporting the sterile object is enclosed by the wrapper.

(5) Drop small sterile items directly into the sterile field.

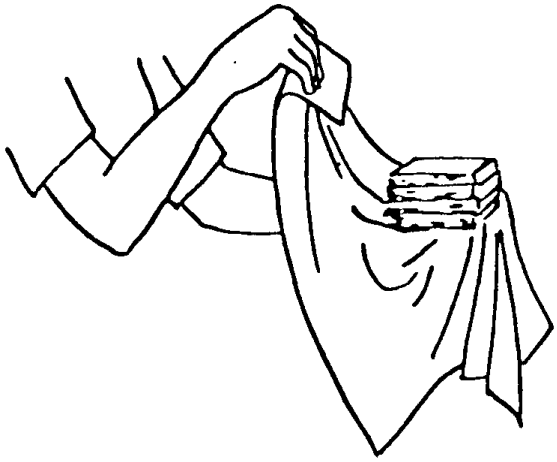


Figure 3-8. Open sterile package.

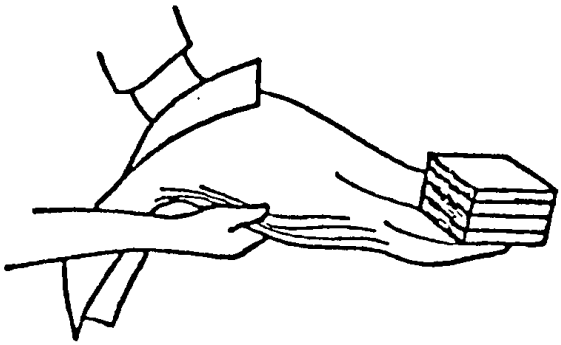


Figure 3-9. Hand enclosed by wrapper.

3-3. ASSISTING THE SCRUB

a. Assist the scrub in donning his gown. Tie the gown, and then open the package containing the scrub's gloves. After the scrub has donned his gloves, adjust the scrub's gown by tugging it floorward by the hem so that the waist will be adjusted properly. You studied the correct procedures for assisting the scrub in donning his gown in Subcourse MD0933, Scrub, Gown, and Glove Procedures. Request permission from the scrub before removing and discarding wrappers for the gown.

b. Assist the scrub by pouring sterile solutions (including the solutions for the skin preparation) and by handing knife blades, suture material, sponges, and suction tubing. When pouring solutions (see Figure 3-10), observe the following rules:

(1) Stand outside the sterile field, near the basin.

(2) Do not reach across the sterile field.

(3) Remove the bottle cap and hold it with the sterile (inside) surface facing skyward while pouring solutions.

(4) Hold the bottle close enough to the basin not to splatter, but not touching the receptacle. Holding the bottle higher may cause the solution to splash and contaminate the setup; holding it lower may endanger the sterile setup.

(5) Do not allow the solution to flow over the outside surface of the bottle. The solution thus contaminated may drip onto the sterile field.

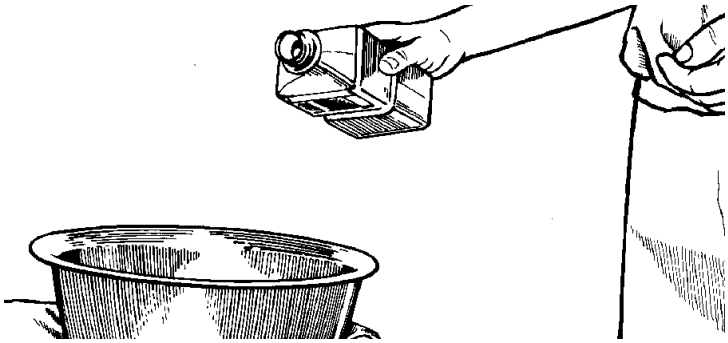


Figure 3-10. The circulator pouring solutions.

NOTE: The circulator holds the bottle about 12 inches above the basin while standing at arm's length from the sterile setup.

(6) Do not recap the bottle. Discard the excess solution remaining in the bottle.

c. Assist the scrub with the Mayo cover. The procedures for draping the Mayo stand are described in detail under the duties of the scrub.

3-4. OPENING SMALL ITEMS

a. Open sutures onto back table.

b. Open and flip into basin, or hand to scrub, such items as the lap tapes, the 4 x 8 inch sponges, the stick sponges, the suction tubing, the medicine glass, and the emesis basin (see Figure 3-11).

c. Open and give scrub the surgeon's gown and gloves.

d. Open and hand off the knife blades.

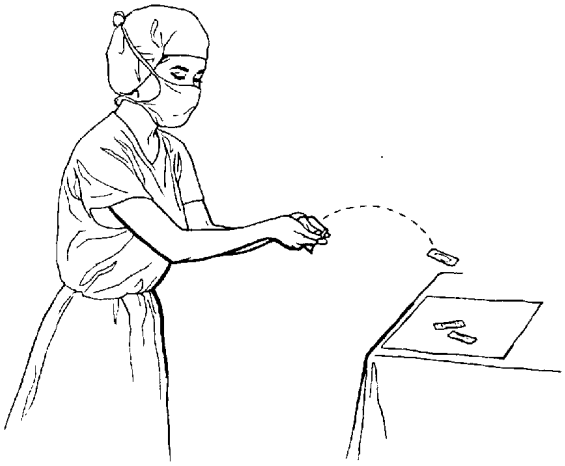


Figure 3-11 The circulator "flipping" supplies onto the back table.

3-5. SPONGE COUNT AND SHARPS COUNT

a. Take the sponge count with the scrub and a registered nurse (RN). The nurse will record it in the designated place (see paragraph 3-20 under duties of the scrub for sponge count procedures).

NOTE: An RN must always be present for the sponge count. The scrub or circulator duties may be assigned to an RN. If both the scrub and the circulator are operating room specialists, an RN must be brought in for the sponge count every time the sponge count is made.

b. Take the count of the sharps. Sharps include such items as needles and knife blades. The procedures for counting sharps are covered in paragraph 3-20. Make an effort to plan your work so that you have finished assisting the scrub by the time the patient is brought into the room. Once the patient is in the room, your time must be devoted to him and to the anesthetist.

3-6. PATIENT PREPARATION

a. As the anesthetist brings the patient into the room, assist with patient positioning as necessary.

(1) Loosen the covers around the patient's litter while the patient is outside the room. Cover the patient's head to prevent the possibility of infection from hair or dandruff from being scattered into the room. Help the anesthetist to bring the patient into the room, and do not bump into sterile tables or other items.

(2) Check to be sure the operating table is in the appropriate position and is locked. Check to make sure the litter is in appropriate place, side rail away from the table is up and locked into place and that the litter wheels are locked. Then move to the far side of the operating table to assist the anesthetist in moving the patient onto the table.

(3) The anesthetist helps to move the patient from the litter to the table. If the patient is unable to help move himself, you are to obtain additional help.

(4) Position the leg strap two inches above the patient's knee and fasten it. Check the strap to be sure it will not obstruct the patient's circulation. You should be able to pass your hand between the strap and the patient's thighs. Loosen the strap if it is fastened too tightly.

(5) Place the patient's arms at his sides and secure them in the lift sheet, or secured upon arm boards.

(6) Once the patient is safe and secured, remove the litter from the room.

(7) Once the anesthetist begins his work with the patient, you are to be available only to the anesthetist until the patient is anesthetized. During the induction stage of anesthesia, stay beside the patient and assist the anesthetist if necessary. During the induction of anesthesia, do not touch the patient. Also, be as quiet as possible. Hearing is one of the last senses to dissipate during induction. Noise is accentuated for the patient during this time and even minor noise will increase his apprehension.

b. Assist in placing the patient in the position for surgery after the anesthetist indicates this is to be done.

c. Arrange the sheet covering the patient so that the operative area is exposed. Do not expose the patient more than is necessary. Assist the surgeon with the skin preparation, if necessary. Position a kick bucket so that it is convenient for the surgeon when he is discarding sponges and other material.

NOTE: The surgeon may request the circulator to perform the preoperative skin preparation.

3-7. PERFORMING PREOPERATIVE SKIN PREP

a. After the patient is anesthetized and positioned on the operating room table, the preoperative skin prep is done by the surgeon, assistant surgeon, or circulator. This means the skin of the operative site and an extensive area round the site is mechanically cleansed again with an antiseptic solution prior to draping. A sterile skin prep tray is opened on the prep table. Usually, the prep tray is disposable, but the prep tray always contains two or more towels, small basin for solutions, sponges (these sponges must not be confused with the counted sponges on the instrument tray), and applicators.

b. Expose the skin area to be cleaned by folding back the sheet. Double-check the operative site and procedure against the patient's chart and operative permit.

c. Place sterile towels above and below the operative area to isolate the area and to protect gloved hands while performing the prep.

d. Don surgical gloves using the open method as follows:

(1) Make sure the glove package has not been contaminated (torn, etc.) and that the gloves are the proper size. Place the package on a clean, dry surface.

(2) Peel back the outer wrapper.

(3) Remove the inner package and place it so that the end marked "cuff" is toward you.

(4) Grasp the lower corner and open the package to a flat position.

(5) Grasp the lower corners of the package and pull to the side in order to expose the cuffs.

(6) Glove your nondominant hand first. Grasp the cuff of the glove on the same side as your nondominant hand with your dominate hand. (See Figure 3-12.)

(7) Remove the glove from the wrapper, step back, and insert your nondominant hand into the glove. (See Figure 3-13.)

(8) With the gloved hand, pick up the remaining glove with hand under the cuff and glove dominate hand.

e. Wet sponge with antiseptic solution and squeeze out excess. Using the wet sponge scrub the skin, starting at the site of incision, with a circular motion in an ever-widening circle to the outer portion of the exposed area. You must use sufficient pressure and friction to remove dirt and microorganisms from skin and pores.

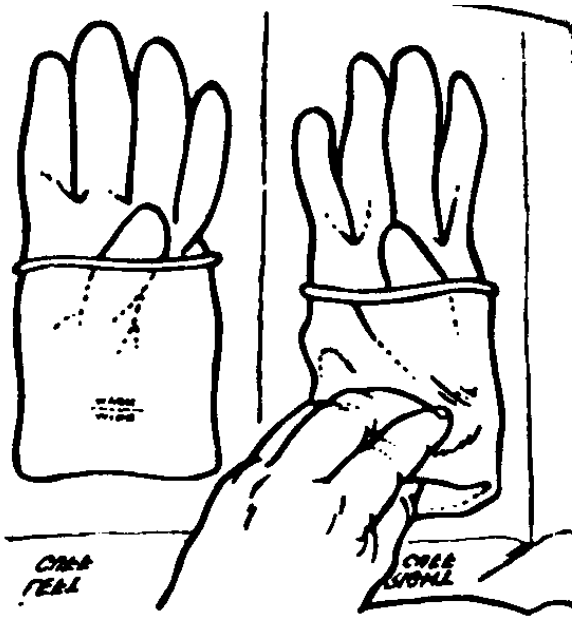


Figure 3-12. Grasp cuff.

Figure 3-13. Hand in glove.

f. Discard the sponge after reaching the outer edge. NEVER bring a soiled sponge back toward the center of the area (Figures 3-14 and 3-15).

g. Repeat the scrub with a separate sponge for each round. Scrub for a minimum of five minutes, blot the area dry with towel, and apply the antiseptic solution in accordance with local policy (Figure 3-16). This step completes the preoperative skin prep.

h. The soiled sponges are discarded into the kick bucket. All unused sponges and those used and discarded into the kick bucket must be removed before the case (surgical procedure) begins.

Figure 3-14. Starts at the site of incision.

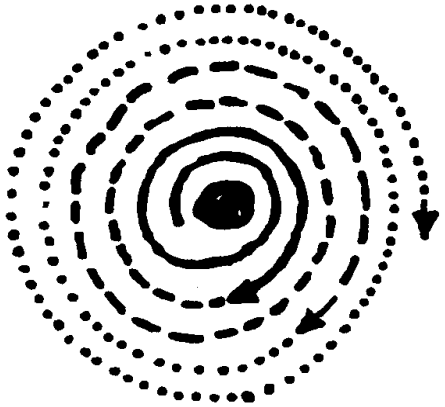


Figure 3-15. Scrubs with a circular, ever-widening motion.

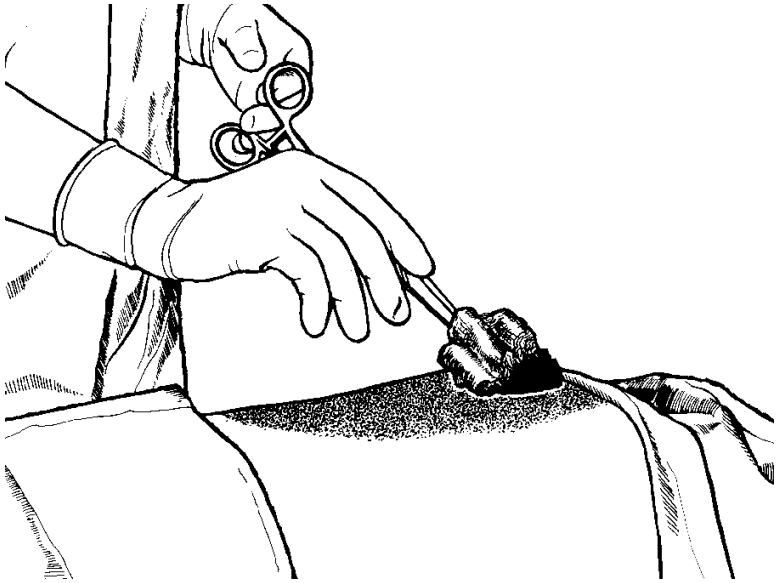


Figure 3-16. Completes scrub with antiseptic solution.

3-8. ASSISTING THE SURGICAL TEAM

a. Assist the surgeons in donning their sterile gowns.

b. Assist in moving the back table, the ring stand, and the Mayo stand into position (refer to paragraph 3-25). At this point, the sterile field has been established and the circulator must not enter this sterile field.

c. Connect the suction machine and adjust the light. Connect and adjust the portable light if it is to be used for additional illumination of the operative site.

d. Place the kick buckets in positions convenient for their use, one on each side of the operating table.

e. Connect the electrosurgical electrode cord or any other electrical equipment to be used. Place foot pedals within easy reach of the surgeon's foot if they are required.

f. Place the straight stools (footstools) or other types of stools into position if they are to be used.

g. During all these procedures the circulator must be aware of and practice aseptic technique. The circulator must be alert for any breaks in aseptic technique by any member of the operating team and take appropriate action if a break occurs.

Section II. DUTIES OF THE OPERATING ROOM SPECIALIST AS A SCRUB

3-9. GENERAL

a. Just as the circulator has specific responsibilities in the operating room, the scrub has specific duties and responsibilities.

(1) Although all the members of the surgical team have a responsibility for the sterility of supplies, the scrub has a particular responsibility. In order to function both effectively and efficiently, he must familiarize himself with the routine established by the hospital as well as the routine followed by each surgeon with whom he scrubs. Only with continued practice and experience can the specialist become a competent assistant at the operating table, but the specialist's experience will take on added meaning if he fully understands what is expected of him. Although surgeons vary in their techniques, the procedures outlined in the following paragraphs are in general use. Additional procedures in setting up will be required for specialized surgery.

(2) The scrub, coordinating his activities with those of the circulator, is to follow an established routine in preparing the sterile setup. Following this routine serves several purposes. It enables the scrub to save time and effort, thereby reducing his fatigue. In addition, when the established routine is known and practiced by all, a scrub can be relieved at any point in the procedure without delaying the case and thus endangering the patient. Again, the order in which the tasks are performed is somewhat flexible, but, in general, the sequence in the following paragraphs is used.

b. The scrub is a sterile member of the operating room team, so from the time the scrub starts the surgical scrub until the operation is completed and the dressings applied, there is a division between the duties of the scrub and circulator which neither may cross. While there is a definite division of duties, they must cooperate so that the operating suite functions efficiently and will serve the patient's best interests.

3-10. PREPARATION OF THE OPERATING ROOM

a. The scrub will also check the operating room schedule for the day and will correctly don hat, scrub suit, and mask in preparation for his duties.

b. The scrub will obtain the surgeon's preference card and check the suture that is required for each case.

3-11. SCRUB

a. While the circulator is checking the equipment and getting the room in order, the scrub does a complete scrub in accordance with local policy. Procedures for a complete surgical scrub are covered in Subcourse MD0933, Scrub, Gown, and Glove Procedures.

b. Following the surgical scrub, you will don a sterile gown and gloves. These procedures were also covered in Subcourse MD0933, Scrub, Gown, and Glove Procedures. After donning the gown and gloves, you must be careful not to touch the gown except for the portion above the waist in front. Do not touch the parts of the gown at or near the neckband and do not touch the axillary (underarm) regions as these parts of the gown are not considered sterile.

NOTE: The illustrations used in this subcourse show the use of disposable drapes, gowns, towels, etc. The narrative will discuss the procedures using disposables. At various places in the text, a discussion of how muslin drapes and towels are used and handled for a particular procedure will be presented.

3-12. PREPARING THE PREP SET

a. Most hospitals use disposable prep sets, but preparation of the prep set is the same. The circulator has opened the prep set and checked the sterilization indicator for sterilization. You, the scrub, must now check the sterilization indicator that is inside the prep set. The sterilization indicator verifies the sterilization process.

b. Arrange the items on the prep table -- sponges, sponge bowl, sponge forceps, and prep cup (metal cup for antiseptic solution). Place the prep gloves on prep table with hand towel resting on them. Once the circulator has poured saline into the sponge bowl, moisten a sponge and wipe the powder from the glove.

3-13. PREPARING THE BASIN SET

a. The circulator has placed the basin set on the ring stand and opened both wrappers. You must check the sterilization indicator. If the sterilization indicator shows inadequate sterilization, discard the basin set; discard gown and gloves; regown and reglove with a fresh set of sterile gown and gloves. The circulator will obtain and open a fresh basin set.

b. If the sterilization indicator shows adequate sterilization, you will place the large basin in the ring of the basin stand.

3-14. PREPARING THE LAP PACK

a. After checking the sterilization indicator, move the contents of the lap pack to a corner of the back table. The lap pack will contain at least a Mayo stand cover, four hand towels, a fenestrated sheet (fenestrated means opening, so a fenestrated sheet has an opening for the operative site), and two drape sheets.

b. Arrange the drapes in order of use and place on ring stand. Both towels and sheets are used as drapes. Towels can be absorbent or nonabsorbent and are used for a variety of purposes such as absorbing moisture, as a cushion or anchor for instruments, or draping the operative site. Leave the Mayo cover on the back table.

3-15. DRAPING THE MAYO STAND

a. The scrub picks up the Mayo stand cover to drape the Mayo stand. The scrub then steadies the stand with one of his feet (see Figure 3-17) as he places the drape over the end of the stand nearest him. The circulator assists by pulling the cover over the stand (see Figures 3-17 and 3-18).

b. The scrub tucks the extra width of the Mayo drape under the tray so that there is no sterile drape hanging down beneath the stand.

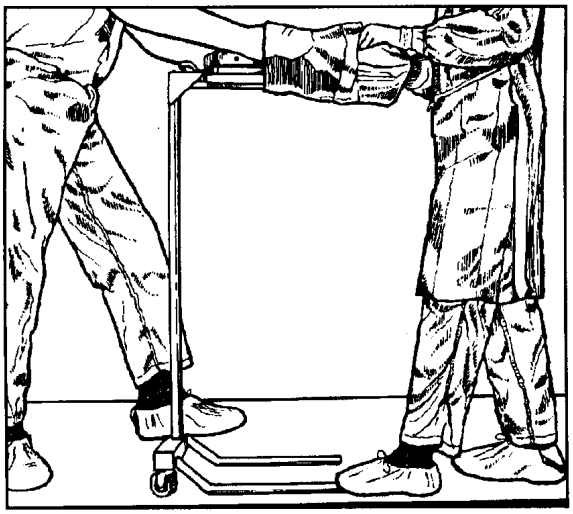


Figure 3-17. Draping the Mayo stand.

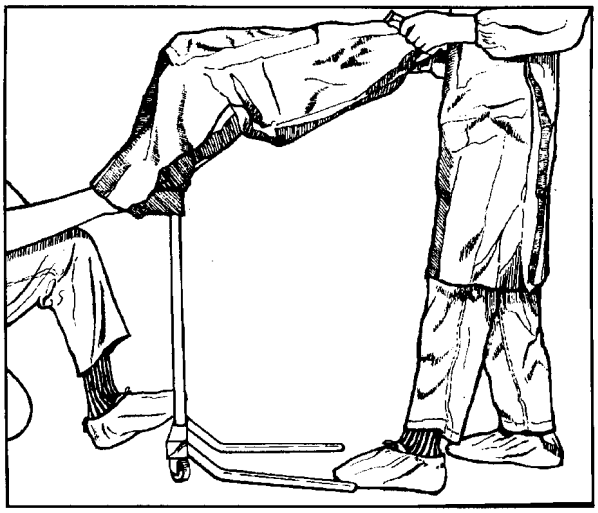


Figure 3-18. The circulator continues to pull the Mayo stand cover over the Mayo stand.

NOTE: The circulator assists the scrub by pulling the Mayo stand cover over the stand. The scrub touches the sterile portion of the cover with sterile gloves. Note the scrub stands away from the stand as he places the cover on the Mayo stand. Both circulator and scrub are holding the stand in place with their foot.

c. The scrub then takes a hand towel from the lap pack; opens the towel; folds the towel in half; and drapes the towel over the tray. He tucks the distal end under the tray and rolls the near end (see Figure 3-19). The rolled end permits suture to be placed under the towel (preparation of suture is covered in paragraph 3-21). After the sutures are prepared and placed under the towel, the towel is unrolled and tucked under the Mayo tray by the scrub. The scrub will then select another hand towel from the lap pack, then roll and place the towel on the Mayo tray for instruments.

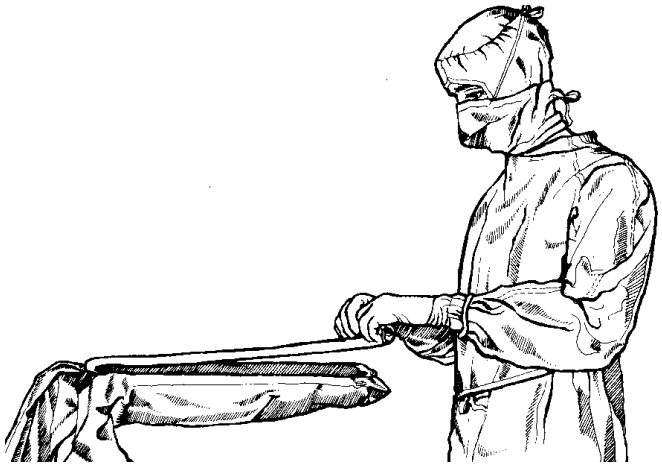


Figure 3-19. Completing the draping of the Mayo stand

NOTE: The Mayo stand cover is on the Mayo stand with the extra width tucked in so there is no sterile drape handing down. Note the scrub has tucked a hand towel under the distal end and is rolling the towel for the placing of sutures.

3-16. PREPARATION OF THE INSTRUMENT SET

a. The instrument set indicated on the surgeon's preference card was placed on the ring stand or table and opened by the circulator. Figure 3-20 shows one such instrument set.

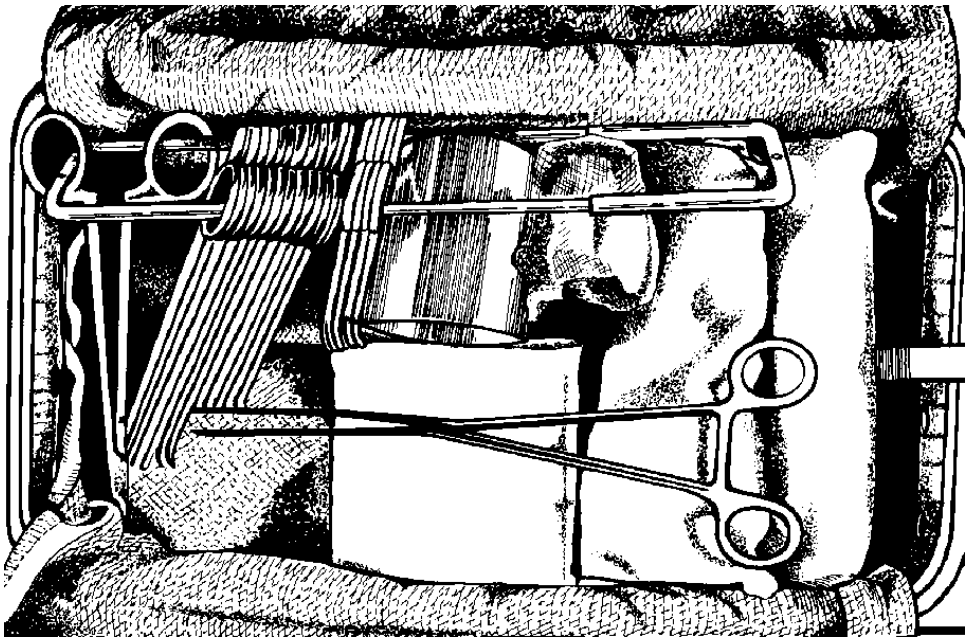


Figure 3-20. Instrument set.

b. The scrub takes a hand towel from the linen pack, rolls the towel, and places it on the back table on which the instruments are to be arranged. The towel makes it easier to pick up the instruments from the back table.

c. The scrub then checks the instrument set sterilization indicator. If the sterilization indicator is acceptable, he proceeds to move the contents of the instrument pan to the back table. If the sterilization indicator does not show adequate sterilization, the instrument set is rejected and the scrub must regown and perhaps reglove.

3-17. ARRANGEMENT OF THE INSTRUMENTS ON THE BACK TABLE

a. The scrub removes the stringer from the ringed instruments and returns the stringer to the instrument pan. The towel clips are closed and placed on the stand with the small towel clips between the drape sheet and lap sheet and the large clips to one side of the drapes.

b. The instruments are arranged on the back table in a manner as shown in Figure 3-21. The ringed instruments are placed on the rolled towel with the small instruments to the front. The retractors are in the rear center of the table with the 4 x 8's and radiopaque sponges in the front center. The emesis basin is placed at the rear of the table and will receive the suture packets. The needle rack is placed on a folded towel in front of the basin.

Figure 3-21. Instruments arranged on the back table

3-18. ARRANGEMENT OF THE INSTRUMENTS ON THE MAYO TRAY

a. The instruments that are placed on the Mayo tray are those that will be used for making and opening the initial incision. These are the instruments that the surgeon will use at the beginning of the procedure.

b. For each basic procedure, a definite class of instruments of suitable size, shape, strength, and function is required. For example: knives and scissors are for cutting or dissecting; tissue forceps are for grasping and holding; hemostatic forceps and clamps are for clamping and occluding (closure); retractors are for exposing; needle holders are for suturing; and sponges are for absorbing fluid and blood. Figure 3-22 illustrates a Mayo stand with instruments prior to surgery. The scrub arranges the instruments on the Mayo tray for the initial incision. He must not overload the tray initially since additional supplies and instruments can be added to the Mayo tray as the operation progresses. Note how the instruments are placed on the rolled towel in Figure 3-22.

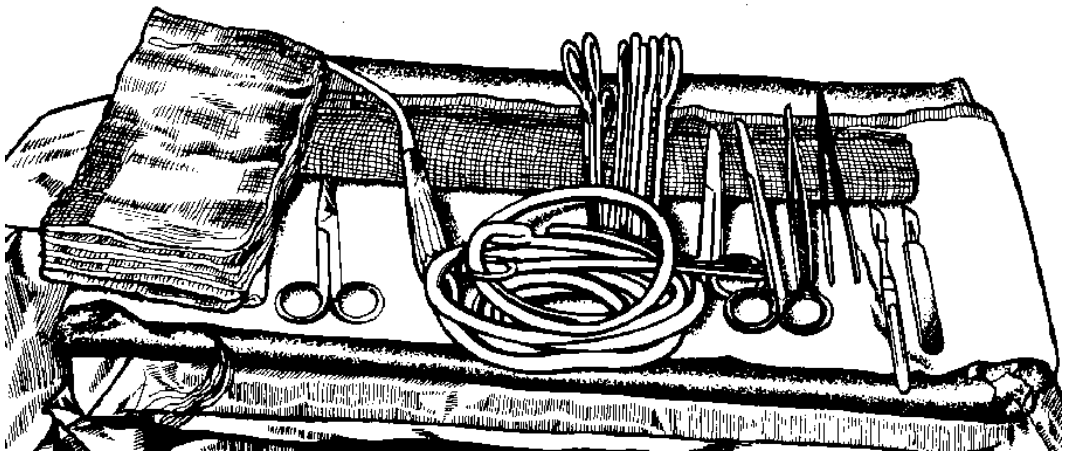


Figure 3-22. Arrangement of instruments on the Mayo stand.

3-19. OPENING SMALL STERILE ITEMS

a. As you arrange instruments from the instrument set on the back table and Mayo tray, you will open other small items and arrange them on both the back table and Mayo tray in preparation for the operation. Some have been mentioned which were displayed in the illustrations.

b. The emesis basin is placed on the back table. The sponges, the 4 x 8's, the suction tubing, the stick sponges, etc., are wrapped separately and must be opened and arranged. The circulator may open the wrappers and pass them to the scrub as shown in Figure 3-23. The circulator will pass the knife blades to you and you will attach the knife blades to the handles. You must always use an instrument (a strong needle holder), never your fingers, to attach the blade to the handle. Holding the cutting edge down and away from you, grasp the blade at its widest and strongest part with a needle holder and slip the blade into the groove on the knife handle. When you hear a click, you know the blade is in place. You must never touch the cutting edge of the blade. After inserting the blades, place the knife holder with blade on the Mayo tray as shown in Figure 3-22.

3-20. INITIAL SPONGE COUNT

a. Each type of operating room procedure requires different kinds and numbers of sponges, needles, and instruments. Each of these items is a foreign object that could cause unnecessary harm or death should it be left inside the patient. To protect the patient, these items are counted before and after use. A counting procedure is a method of accounting for items put on the sterile table for use during a surgical procedure. The counting procedure may differ at various hospitals, but the count itself is mandatory. This subcourse will focus on sponge counts.

Figure 3-23. Circulator passing supplies to the scrub.

b. The scrub will count the sponges with the circulating RN at the first opportunity. An RN must witness the count. A sponge count is necessary for surgical procedures when the depth or the location of the wound may allow a sponge to be left undetected in the wound. Such procedures include laparotomies (operations within the abdominal cavity), surgical procedures within the chest cavity, extra peritoneal operations such as kidney surgery, deep vaginal procedures, and operations on the hip and others. Points to be remembered and observed by both the scrub and the circulator during the sponge count are given below.

NOTE: Only radiopaque (X-ray detectable) sponges are to be used during surgery. Since the prep sponges are not radiopaque, they are to be used only for the prep. Prep sponges are not to be removed from the room. The circulator will put them in a place apart from the sponges that are counted.

(1) Counted sponges are grouped according to type and then counted. Neither sponges, nor linen, nor trash may be removed from the room once the sponges have been counted.

(2) There should be no interruptions during the count. If either the scrub or the circulator loses count, they are to recount.

(3) The scrub should slightly separate the sponges to make sure all sponges are counted (Figure 3-24).

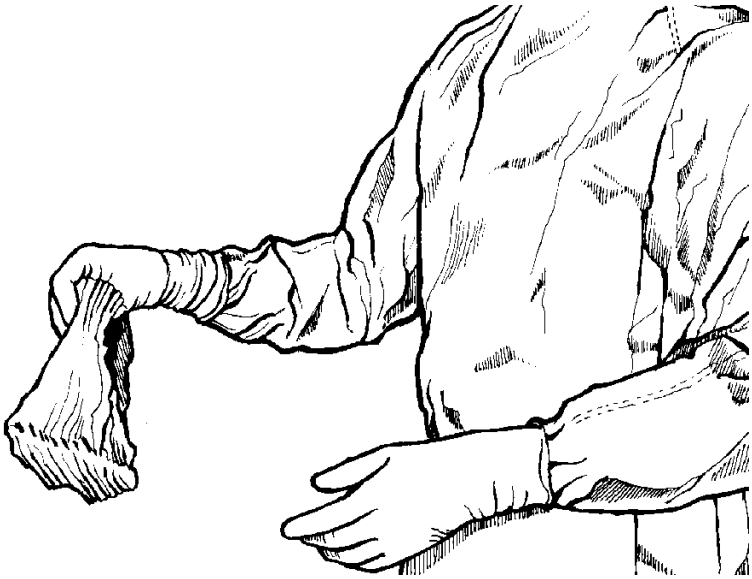


Figure 3-24. The scrub preparing sponges for first sponge count.

(4) Sponges are to be counted at the same time by the scrub and the registered nurse. Each sponge is to be separated from the others as it is counted (see Figure 3-25). Both the specialist and the RN must see every sponge and must see the radiopaque marking on each sponge. If all are not in agreement on the count, the count must be repeated.

(5) If the number of sponges in a new pack is incorrect, the entire pack must be removed from the room by the circulator and a new pack will be opened. The number of sponges in a pack will vary with the type of sponge. A standardized count routine is established in each hospital to help avoid a possibility of error. You must learn the local policy and follow it with meticulous attention to detail.

(6) When the scrub and RN are in agreement, the count is recorded immediately by the RN. Local policy will prescribe the manner in which the count is recorded. Most installations use a count "board."

(7) If additional sponges are needed during the case, they are counted and recorded in the same manner and added to the initial sponge count.

(8) Sponges are kept away from articles that might drag a sponge into the wound unknowingly.

(9) Kitner sponges (small rolls of heavy cotton tape and used with a forceps) are kept in a medicine glass. Dirty ones are discarded into another medicine glass to facilitate counting them.

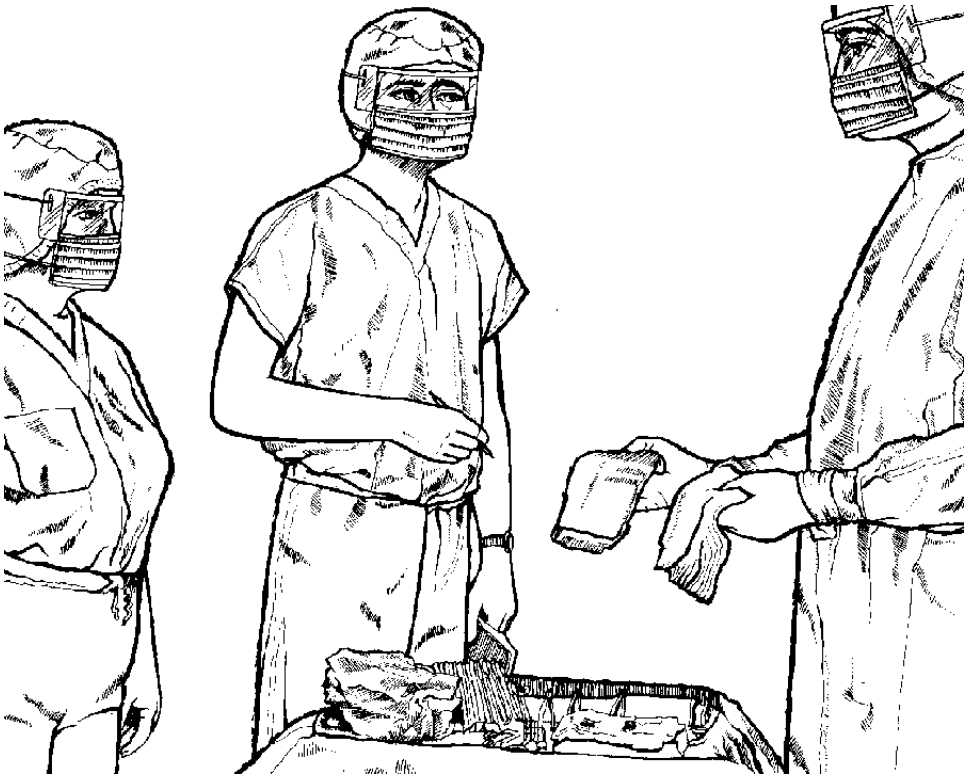


Figure 3-25. Performing the sponge count.

(10) Lap sponges (sponges with a loop of twilled taped sewed on one corner) are unfolded as they are counted and placed on the back table.

(11) Stick sponges (small gauze sponges used with a forceps) are placed in an empty emesis basin and placed on the back table.

(12) After the sponge count is completed, place a few of the appropriate sponges on the Mayo tray for the initial incision.

3-21. SUTURE PREPARATION

a. Just as the physician's preference card is checked for the instruments he requires for the surgical procedure, the surgeon's preference card is checked by the scrub and circulator for the right kind of sutures for the procedure. A suture is a strand of material used to tie blood vessels and to sew tissues together. As a verb, to suture is the act of sewing or bringing together. A variety of sizes, strengths, and materials are used in surgical procedures. Sutures come in sterilized prepacked foil or plastic packets. Surgical gut, nylon, silk, stainless steel, and cotton are just a few examples of the material used in suture. The more zeros in the number, the smaller the size of the strand of suture. The surgeon's preference card will tell you the type and size suture you will need for the procedure.

b. You should prepare the sutures in the order in which the surgeon will use them. The circulator will pass the suture packets to the sterile area either by flipping them into the basin on the back table or by opening the outer wrapper with the scrub reaching for it with gloved hand or sterile instrument. Suture material without an attached needle is referred to as a "tie." The scrub will open individual packets of ties using the following procedures.

(1) Tear foil or plastic packets across the dotted line of the packet.

(2) Remove the suture material from the packet, unwind or unfold the material, cut the strand for the proper length, and place these strands under the rolled end of the towel on the Mayo tray. As you work in preparing the ties, you must work over the sterile field to avoid contaminating the tie. Avoid letting the suture ends drop over the edge of the instrument table. Figures 3-26 through 3-29 illustrate the handling and preparation of suture materials.

c. General rules on handling suture material include the following:

(1) Limit handling to the absolute minimum.

(2) Never stretch, jerk, or "test" the strengths of the suture.

(3) Avoid crushing strands in instruments.

(4) Do not run gloved hands over suture to straighten kinks.

(5) Do not open and prepare too many sutures in advance

d. After you have placed all the required ties under the rolled towel on the Mayo tray, unroll the end of the towel and place under the tray. The ties are always removed from the Mayo tray toward the sterile field, never away from the sterile field.

3-22. PREPARATION OF SURGICAL NEEDLES

Most suture have swaged needles attached to the suture material. The swaged needles are left in the inner folder of the suture packet until the surgeon is ready to use them. If free or eyed needles are used, a needle holder or needle rack is prepared in advance for the operation based on standard local policy. Needles must never be loose on the sterile field. All needles are sharps and must be counted.

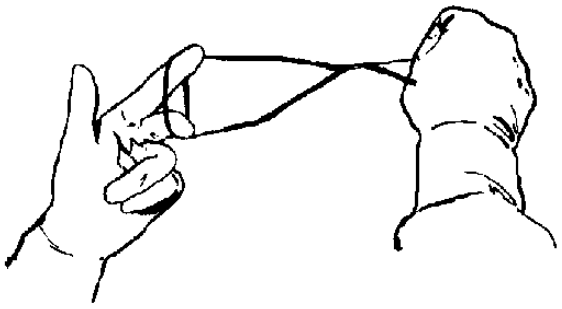


Figure 3-26. Unwind suture material.

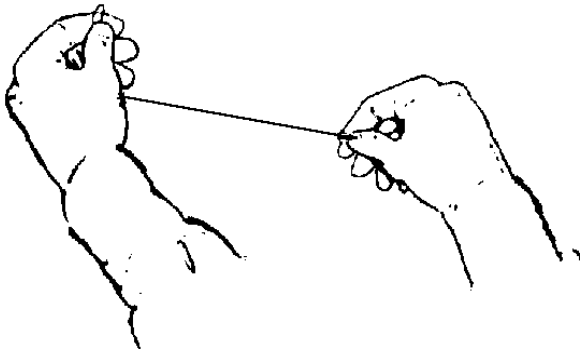


Figure 3-27. Prepare correct lengths

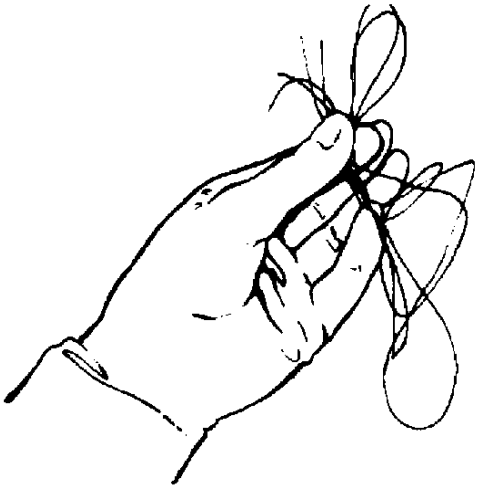


Figure 3-28. Correct lengths.

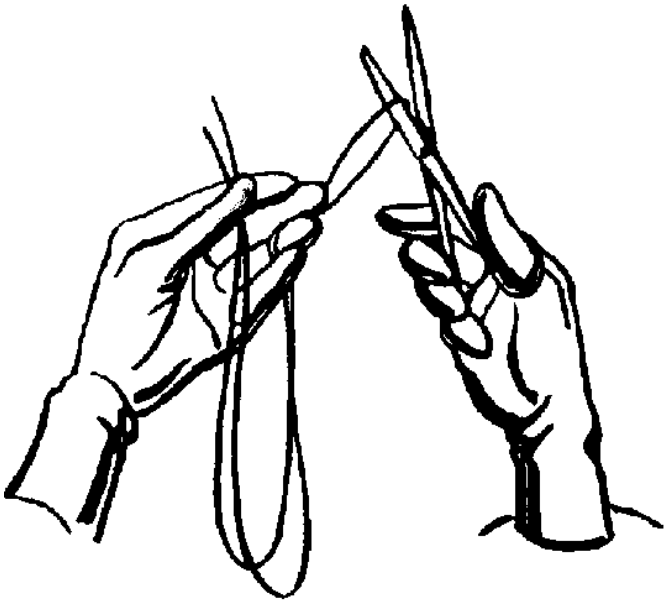


Figure 3-29. Cutting proper lengths.

3-23. GOWN AND GLOVE PROCEDURES (SURGEON)

a. The scrub assists the surgeon and assistants with the gown and gloves as soon as possible after they enter the operating room. Never interrupt a sponge count for this. The scrub receives the gown and gloves from the circulator and will hold the gown and gloves for the surgeon in accordance with the procedures covered in Subcourse MD0933, Scrub, Gown, and Glove Procedures.

b. Usually, gloves have a light powder to facilitate gloving. A fresh sponge and saline solution is used to wipe the powder from the gloves and the sponge is discarded.

3-24. DRAPING THE PATIENT

a. The procedure of covering a patient and surrounding areas with a sterile barrier to create and maintain a sterile field during a surgical procedure is called draping. The purpose of draping is to eliminate the passage of microorganisms between nonsterile and sterile areas. Draping materials may be disposable or nondisposable. Disposable drapes are generally paper or plastic or a combination and may or may not be absorbent. Nondisposable drapes are usually double-thickness muslin. Drapes, of course, must be sterile.

b. Since draping is very important in preparing a patient for surgery, it must be done correctly. The entire surgical team should be familiar with the draping procedure. The scrub must know the procedure perfectly and be ready to assist with it. During the draping procedure, the circulator should stand by to direct the scrub as necessary and to watch carefully for breaks in sterile technique.

(1) The illustrations in Figures 3-12 and 3-13 show disposable paper drapes. The first step in draping is the placing of a drape sheet from the foot to the knees. The scrub will select the sheet and hand one end to the surgeon across the operating table, supporting the folds, keeping it high, and holding it taut until it is opened, then drop it (open fingers and release sheet). The second drape sheet is handled in the same manner. This sheet is placed below the incision site with the edge of the sheet just below the incision site. This draping sheet provides extra thickness of material under the area from the Mayo tray to the incision where instruments and sponges are placed. It also closes some of the opening in the laparotomy sheet, if necessary.

(2) When disposable drapes are used, the towels usually have a removable strip with an adhesive on the folded edge. The third step in draping is placing the four sterile towels around the line of incision. The scrub unfolds first towel, passes the towel drape to the surgeon with the strip side facing the scrub, and then removes the adhesive strip. The surgeon places the towel within the scrubbed area on the near side of the line of incision, leaving only enough exposed skin for the incision. The second towel is placed in the same way, except the towel is placed on the lower side (toward feet) of the line of incision. The third towel is passed the same way, except the towel is placed on the upper side (toward head) the line of incision. The last towel is passed to the surgeon with the adhesive strip facing the surgeon and is placed on the far side of the line of incision. The adhesive area holds the towel drapes in place.

NOTE: The only procedure changes that are made with nondisposable, muslin drapes (for example, hand towels) are as follow. The towels are cuffed by the scrub about 3 inches and the folded edge goes next to the line of incision. The first three towels are cuffed toward the scrub; the fourth towel is cuffed toward the surgeon. The towels are held in place by towel clips rather than by adhesive.

(3) Finally, the scrub will select the surgical drape (lap sheet). This lap sheet has a fenestration (opening) in the drape for the incision. The scrub places the opening directly over the skin area outlined by the drape towels and in the direction indicated for the foot or head of the table. The lap sheet will have an arrow or some other indication to identify the head or foot portion of the drape. Drop the folds over the sides of the table, then open it downward over the patient's feet and upward over the anesthetist screen.

c. Aseptic technique must be observed at all times in the draping process. You should:

(1) Handle the drapes as little as possible.

(2) Never reach across the operating table to drape the opposite side; go around the table.

(3) Hold the drapes high enough to avoid touching nonsterile area but avoid touching the overhead light.

(4) Hold the drape high until it is directly over the proper area, then drop (open fingers and release sheet) it down where it is to remain. NEVER ADJUST ANY DRAPE. If the drape is incorrectly placed, leave it in place and place another drape over it.

(5) Protect the gloved hands by cuffing the end of the sheet over them. Do not let the gloved hand touch the skin of the patient.

(6) In unfolding a sheet from the operative site toward the foot or head of the table, protect the gloved hand by enclosing it in the turned back cuff of the sheet.

(7) If a drape becomes contaminated, discard it immediately.

(8) If the end of a drape falls below waist level, do not handle it further. Drop it and use another drape.

(9) If in doubt about sterility, discard the drape.

(10) If a hole is found in a drape after it is laid down, cover the hole with another drape or discard the entire drape.

3-25. PREPARATION FOR PROCEDURE

a. After draping is completed, you will bring the Mayo stand into position over the patient. This indicates that you are prepared to assist with the surgery. Ensure that the Mayo stand is high enough that it does not rest on the patient. Figure 3-30 shows

the Mayo stand being placed into position with sufficient room between patient and stand.

b. Position the back table and ring stand at right angles to the operating table. The sterile circle is now complete (see Figure 3-31).

(1) Lay a towel for instruments below the fenestration in the drape and lay two or more sponges on this towel.

(2) Place the suction tubing convenient for the surgeon.

(3) If an electrosurgical unit is used for the procedure, attach the electrosurgical cord to the drapes with a nonperforating clamp. Ensure that ample length is provided to reach both the incision area and the equipment before dropping the end off the side of the table nearest the unit to which the circulating nurse will attach the cord. A description and use of electrosurgical units is provided in Subcourse MD0923, Introduction to the Operating Room.

3-26. ASEPTIC TECHNIQUE

a. During the preparation of the operating room and the patient for surgery, the principles of aseptic technique must be strictly observed. Both the scrub and the circulator must be on the alert for breaks in technique and take corrective action immediately. Even with experienced personnel, breaks will occur and corrections must be made.

b. One of the primary responsibilities that you have as an operating room technician is to be continuously aware of sterile technique and take whatever action is necessary to correct any breaks you observe.

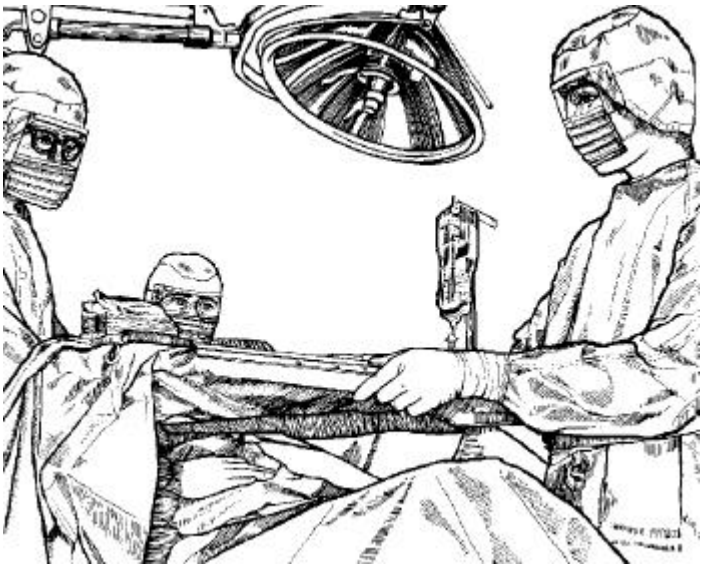


Figure 3-30. Placing the Mayo stand into position over the patient.

NOTE: The stand is some distance above the patient.

Figure 3-31. The sterile field.

NOTE: The back table and ring stand are at right angles to the operating table. The stand is positioned over the patient. The surgeon and scrub are working on the patient; the anesthetist is at the head using his equipment. The circulator observes and is ready to respond.

Continue with Exercises

EXERCISES, LESSON 3

INSTRUCTIONS: The following exercises are to be answered by marking the lettered response that best answers the question or best completes the incomplete statement or by writing the answer in the space provided.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers.

1. How do you know which sutures are required for a procedure?

   _____

2. The suction machine is connected to an electrical outlet by which team member? _____

3. Define:

   a. Kitner sponges _____

   b. Lap sponges _____

   c. Stick sponges _____

4. As soon as the patient has been placed upon the operating table, you (the circulator) should place and secure the leg strap. Your next step is to:

   a. Remove the litter from the room.

   b. Help position the patient for surgery.

   c. Secure the patient's arms.

   d. Place the suction machine at the head of the operating table.

5. A _____ is a method of accounting for items put on the sterile table for use during a surgical procedure.

6. What is the purpose of draping?

_____

7. Rules of aseptic technique in draping include:

a. _____

b. _____

c. _____

d. _____

e. _____

8. In using the statement, "integrity of every package," it means that in relationship to sterile supplies that every package will be checked for:

_____

_____

_____

9. List the four steps the circulator performs before preparing the operating room for surgery.

a. _____

b. _____

c. _____

d. _____

10. What is the first step to be performed in draping a Mayo stand?

_____

11. What does the circulator do during the draping procedure?

_____

12. Several general rules on handling suture material were presented in this lesson. Write three of those rules.

a. _____

b. _____

c. _____

13. What is the minimum scrub time for the preoperative skin prep according to this subcourse?

_____

14. Who checks the surgeon's preference card for the right kind of sutures for the procedure?

_____

15. Who assists the surgeon in gowning and gloving?

a. Scrub.

b. Circulator.

c. Registered Nurse.

d. Usually no one.

16. List the minimum contents of a lap pack.

_____

_____

_____

_____

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 3

1. Surgeon's preference card (para 3-21a)

2. Circulator (paras 3-8c, 3-1c)

3. a. Small rolls of heavy cotton tape (para 3-20b(9))
   b. Sponges with a loop of twilled tape sewed on one corner (para 3-20b(10))
   c. Small gauze sponges (para 3-20b(11))

4. c (para 3-6a(5))

5. Counting procedure (para 3-20a)

6. To eliminate the passage of microorganisms between nonsterile and sterile areas. (para 3-24a)

7. Any of the following: (para 3-24c)
   Handle drapes as little as possible.
   Never reach across the operating table to drape.
   Hold drapes high enough to avoid touching nonsterile area.
   Never adjust the drape.
   Protect the gloved hands by cuffing.
   If drape becomes contaminated, discard.
   If the end of a drape falls below waist level, discard.
   If in doubt about sterility, discard.
   If a hole is found in drape after it is laid down, cover the hole with another drape, or discard.

8. Tears, punctures, watermarks, expiration date, and sterilization indicator. (para 3-2k)

9. Wash hands thoroughly (para 3-2b)
   Don surgical hat
   Don scrub suit
   Don surgical masks

10. The scrub picks up the Mayo stand cover, steadies the stand with one foot, and places the drape over the end of the stand nearest him. (para 3-15a)

11. Stand by to direct the scrub as necessary and watch for breaks in sterile technique. (para 3-24b)

12. Any three of the following:

    Limit handling.
    Never stretch, jerk or test the strength.
    Avoid crushing strands.
    Do not run gloved hands over suture.
    Do not open and prepare too many in advance. (para 3-21c)

13. Five minutes (para 3-7g)

14. Scrub and circulator (para 3-21a)

15. a (para 3-23a)

16. Mayo stand cover
    2 drape sheets
    4 hand towels
    fenestrated sheet (para 3-14a)

End of Lesson 3

LESSON ASSIGNMENT

LESSON 4 Procedures During and Following Surgery.

TEXT ASSIGNMENT Paragraphs 4-1 -- 4-8.

LESSON OBJECTIVES After completing this lesson, you should be able to:

4-1 Identify procedures that are performed by the circulator during and following an operation.

4-2 Identify procedures that are performed by the scrub during and following an operation.

4-3 Identify incidents that will break aseptic technique.

4-4 Identify and select various instruments used for a laparotomy procedure.

SUGGESTION After completing the assignment, complete the exercises at the end of the lesson. These exercises will help you to achieve the lesson objectives.

LESSON 4

PROCEDURES DURING AND FOLLOWING SURGERY

Section I. PROCEDURES DURING SURGERY

4-1. MAINTENANCE OF QUIET

a. The scrub and the circulator should talk as little as possible throughout a surgical procedure in order to help promote sterile conditions. Droplets expelled from the mouth during conversation may contain pathogenic microorganisms. Masks should be changed as often as necessary. Do not allow a mask to become wet.

b. Once the patient has been brought into the operating room, quiet should be maintained to avoid frightening or exciting him. The maintenance of quiet is of particular importance when the patient has been given spinal or local anesthesia and is awake during a procedure. Team members should avoid any mention of such things as knives, blood, and the like. In addition, there should be no discussion of the diagnosis or the condition of any patient.

4-2. MAINTENANCE OF ASEPTIC TECHNIQUE

a. **General**. The circulator has the best opportunity to see breaks in aseptic technique. However, the scrub and all of the other team members in the operating room are also responsible for watching for breaks in technique. Whenever such a break is observed, the team member who sees it should speak up at once so that the necessary corrective measure can be taken.

b. **Circulator**. The circulator must be alert to any break in sterile technique and observe the following rules.

(1) Do not touch or reach over the sterile field. When placing sterile items, transfer is made to the edge of the instrument table.

(2) Face sterile areas when passing; do not pass between two sterile areas or two sterile team members.

(3) Do not touch the edge of the cap or lid to the edge of the container into which sterile solutions are poured.

(4) Wash hands vigorously for at least 15 seconds after each patient contact or handling contaminated items.

(5) Keep conversation to a minimum. Keep hair covered and mask in place. Change masks when necessary.

(6) Decontaminate floor and walls promptly during the operation if they are contaminated by blood or other organic material. Local procedures will identify the disinfectant solution you will use. Prompt decontamination will prevent microorganisms from drying and becoming airborne.

c. **Scrub**. The scrub must constantly maintain sterile technique and watch for breaks as he observes the following rules.

(1) Step away from the sterile field if contaminated and request fresh sterile attire from the circulator.

(2) Change glove immediately and discard the needle or instrument if a glove is pricked by a needle or snagged by an instrument.

(3) Discard suture material, tubing, or sponge that falls over the edge of the sterile field.

(4) Keep hands at waist level, never below the waist.

(5) Keep contact with the sterile field to a minimum. Never lean on or against the operating table, Mayo stand, instrument table, or patient.

(6) Leave a wide margin of safety when moving about the room. When passing nonsterile objects or persons, turn your back to them.

(7) Face sterile areas when passing them. Do not turn your back to the sterile field.

(8) Pass another sterile team member back to back. Do not reach behind a sterile team member.

(9) Keep the sterile field and table as dry as possible.

(10) Discard soiled sponges from the sterile field.

(11) Avoid coughing and sneezing. Keep talking to a minimum.

d. **Hair.** The patient's hair will be covered before he is brought into the operating room. This measure protects the sterile setup from the microbial population in the patient's hair. In addition, it prevents the discharge of static electric sparks from the patient's hair.

e. **Sheets.** The team member who brings the patient into the operating room is to loosen the sheets covering the patient before transporting him into the room. This measure prevents the creation of static electricity and prevents the need for vigorous handling of the linen in the room, thus avoiding the scattering of microorganisms from this source.

4-3. DUTIES OF THE CIRCULATOR

During a surgical procedure, the circulator must be alert to the needs of both the surgeon and the scrub. He should anticipate what will be needed and have the supplies and equipment available. The following paragraphs set forth procedures that the circulator is to follow.

a. Do not leave the room unless you are sent for equipment or supplies or you are relieved by another circulator. If you are leaving the room to obtain equipment or supplies, notify the scrub and anesthetist and return as quickly as possible. If the supplies or equipment cannot be obtained quickly, notify the operating room supervisor or the noncommissioned officer in charge (NCOIC) and return to the operating room.

b. When a general anesthetic is being administered, stay at the patient's side. If it is necessary to move in the anesthesia area, use smooth, careful movements.

c. Watch to see what the scrub needs and furnish this material.

d. Keep the operating room light adjusted so that there is no shadow on the operative area. If the light appears to need adjustment, ask the surgeon's permission before refocusing the light. Keep well away from the sterile field while adjusting the light.

e. Keep the room neat by removing sponges, instruments, bits of suture, etc., from the floor. Use an unsterile sponge forceps to pick up soiled sponges (for your protection, do not pick them up with your hands) and then place them in such a way that will facilitate counting. Pick up sponges as they are discarded and do not allow them to accumulate. Put them in an area where they can be observed by the surgeon, the anesthetist, and the scrub.

f. Keep the saline in the basins warm, if required, by adding hot solution as necessary.

g. Prepare appropriate size specimen jars (with lids) to receive the specimen.

(1) Formalin solution, 10%, is used for routine specimens of tissue (check with the surgeon before placing the specimen into the solution).

NOTE: Formalin should **NEVER** be in the operating room when a patient is in the room.

(2) Normal saline solution is used in the following instances.

(a) Tissue specimens are to be examined for the presence of tuberculosis organisms.

(b) Tissue specimens are to be photographed (formalin discolors tissue). Once a routine specimen has been photographed, it may be placed in 10% formalin solution.

(c) Tissue specimens are to be prepared for frozen section. Tissue will be placed in a specimen container, labeled, and sent to Pathology immediately.

h. Prepare the appropriate forms, such as the SF 515 (Tissue Examination) according to local policy. Also, write the information required by local policy on a gummed label and stick it on the specimen jar. (Such information should include at least the patient's name and register number, the name of the operation, the surgeon's name, the date, and the kind of tissue included for examination.) This precaution ensures that the specimen can be identified with the appropriate patient in case the pathology forms are lost.

i. Turn on the suction machine when all furniture is moved in place.

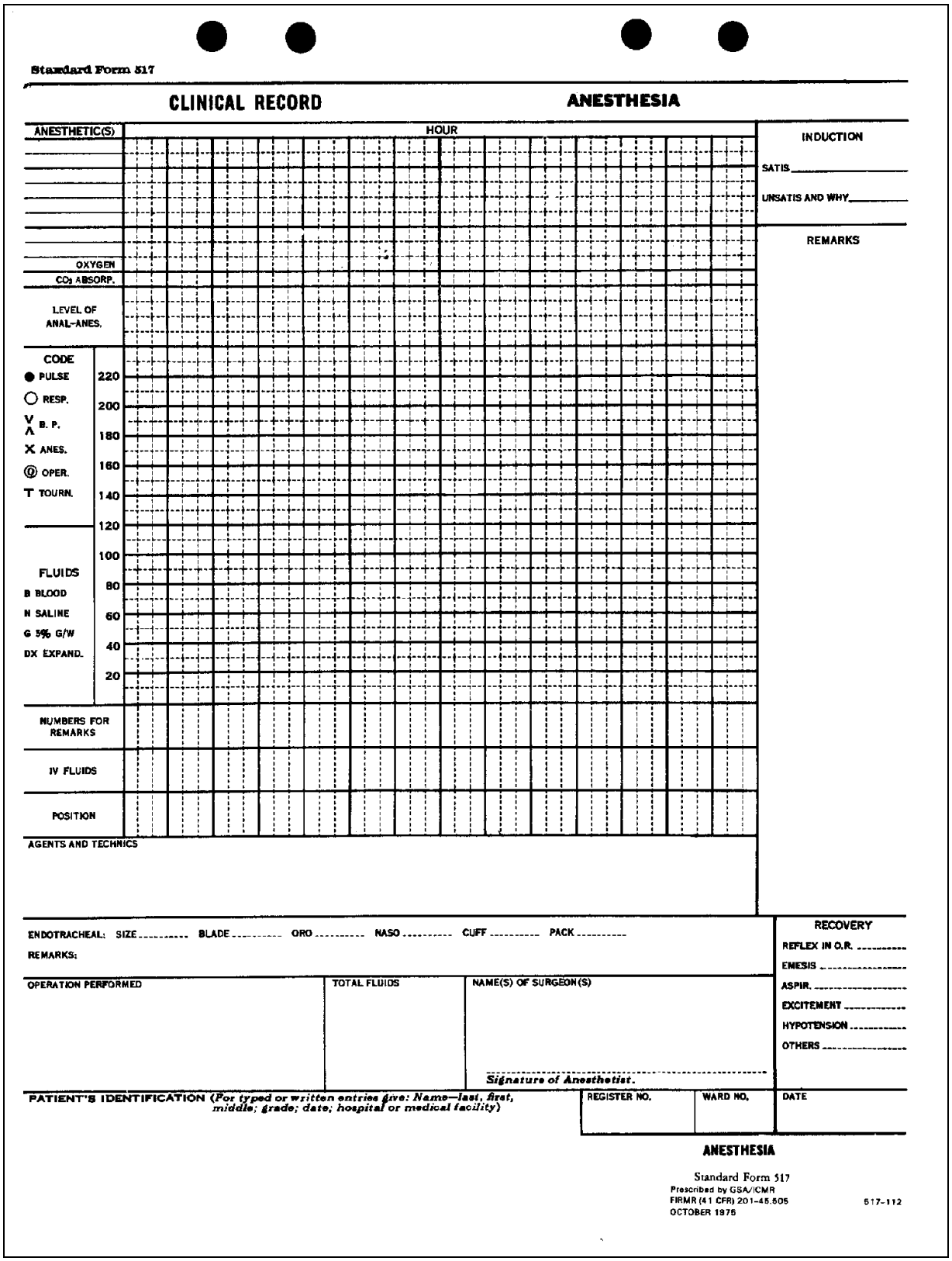
j. According to local procedure, prepare two copies of the appropriate anesthesia record, SF 517 (Clinical Record - Anesthesia) by stamping it with the patient's hospital card (see Figure 4-1).

k. Take the sponge count with the scrub and a registered nurse. Make sure that you see each sponge.

l. Prepare the adhesive strips and any other materials required for dressing the patient's wound.

m. Fill out an "Operative Sheet" or "Buck Slip" according to local policy. Record in appropriate places on this sheet identifying information about the patient, the name of the operation (procedure), the tissue specimen, and the names of the surgeon, the anesthetist, the scrub, and the circulator. A sample of DA Form 4107, Operation Request and Worksheet, is illustrated in Figure4-2.

n. If you are relieved during the operation, instruct the new circulator on what is taking place before you leave the room. You must also do a "turn over count" of sharps and sponges before you leave the room.



Standard Form 517

CLINICAL RECORD — ANESTHESIA

ANESTHETIC(S) | HOUR

INDUCTION
SATIS _____
UNSATIS AND WHY _____

REMARKS

OXYGEN
CO_2 ABSORP.
LEVEL OF ANAL-ANES.

CODE
● PULSE
○ RESP.
V / Λ B. P.
X ANES.
ⓞ OPER.
T TOURN.

220 200 180 160 140 120 100 80 60 40 20

FLUIDS
B BLOOD
N SALINE
G 5% G/W
DX EXPAND.

NUMBERS FOR REMARKS
IV FLUIDS
POSITION
AGENTS AND TECHNICS

ENDOTRACHEAL: SIZE ..... BLADE ..... ORO ..... NASO ..... CUFF ..... PACK .....
REMARKS:

RECOVERY
REFLEX IN O.R. .....
EMESIS .....
ASPIR. .....
EXCITEMENT .....
HYPOTENSION .....
OTHERS .....

OPERATION PERFORMED | TOTAL FLUIDS | NAME(S) OF SURGEON(S)

Signature of Anesthetist.

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name—last, first, middle; grade; date; hospital or medical facility*)

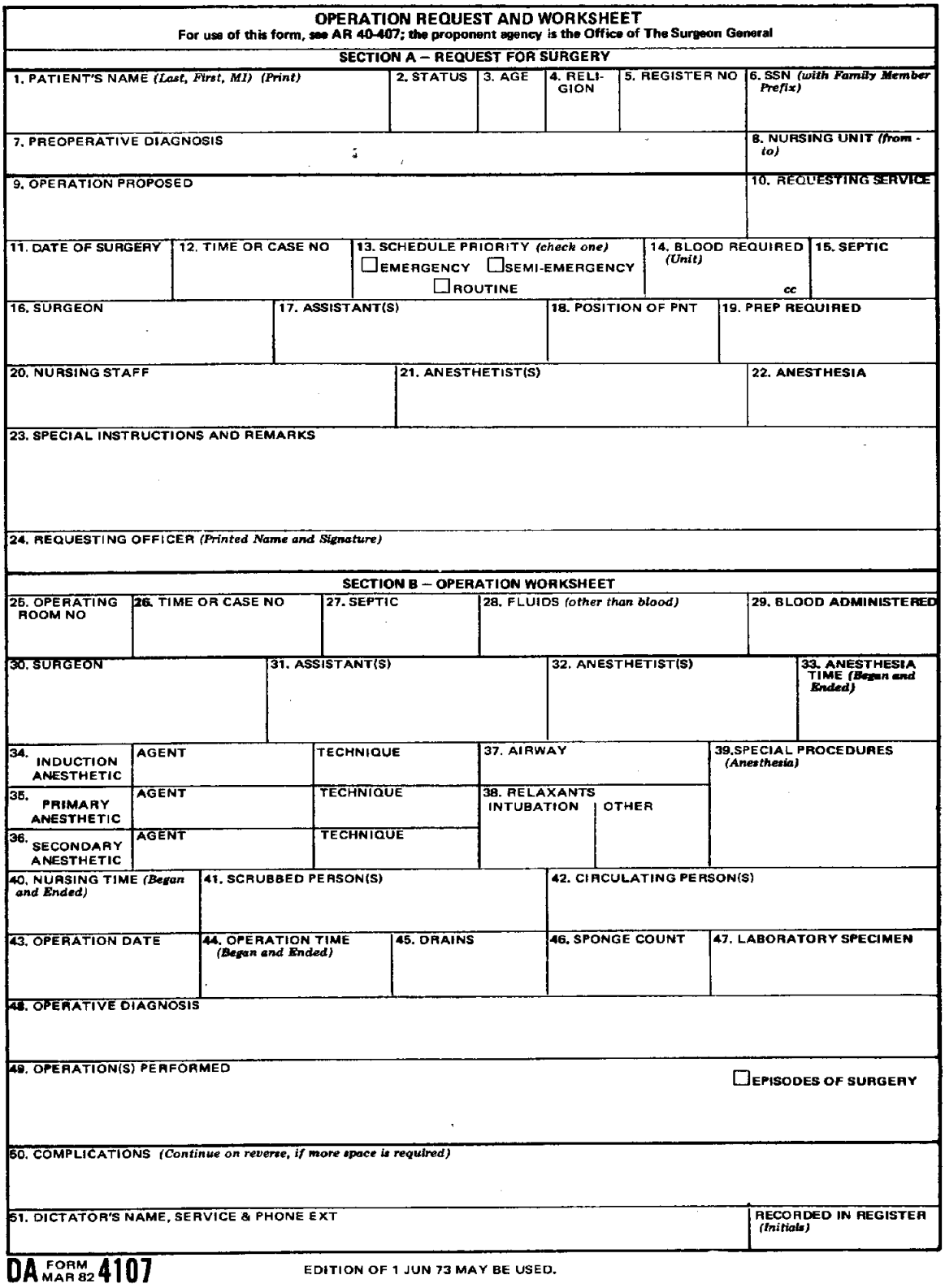
REGISTER NO. | WARD NO. | DATE

ANESTHESIA

Standard Form 517
Prescribed by GSA/ICMR
FIRMR (41 CFR) 201-45.505
OCTOBER 1975

517-112

Figure 4-1. SF 517, Clinical Record - Anesthesia.



OPERATION REQUEST AND WORKSHEET

For use of this form, see AR 40-407; the proponent agency is the Office of The Surgeon General

SECTION A – REQUEST FOR SURGERY

1. PATIENT'S NAME *(Last, First, MI) (Print)*	2. STATUS	3. AGE	4. RELIGION	5. REGISTER NO	6. SSN *(with Family Member Prefix)*

7. PREOPERATIVE DIAGNOSIS	8. NURSING UNIT *(from - to)*

9. OPERATION PROPOSED	10. REQUESTING SERVICE

11. DATE OF SURGERY	12. TIME OR CASE NO	13. SCHEDULE PRIORITY *(check one)* ☐EMERGENCY ☐SEMI-EMERGENCY ☐ROUTINE	14. BLOOD REQUIRED *(Unit)* cc	15. SEPTIC

16. SURGEON	17. ASSISTANT(S)	18. POSITION OF PNT	19. PREP REQUIRED

20. NURSING STAFF	21. ANESTHETIST(S)	22. ANESTHESIA

23. SPECIAL INSTRUCTIONS AND REMARKS

24. REQUESTING OFFICER *(Printed Name and Signature)*

SECTION B – OPERATION WORKSHEET

25. OPERATING ROOM NO	26. TIME OR CASE NO	27. SEPTIC	28. FLUIDS *(other than blood)*	29. BLOOD ADMINISTERED

30. SURGEON	31. ASSISTANT(S)	32. ANESTHETIST(S)	33. ANESTHESIA TIME *(Began and Ended)*

34. INDUCTION ANESTHETIC	AGENT	TECHNIQUE	37. AIRWAY	39. SPECIAL PROCEDURES *(Anesthesia)*
35. PRIMARY ANESTHETIC	AGENT	TECHNIQUE	38. RELAXANTS INTUBATION / OTHER	
36. SECONDARY ANESTHETIC	AGENT	TECHNIQUE		

40. NURSING TIME *(Began and Ended)*	41. SCRUBBED PERSON(S)	42. CIRCULATING PERSON(S)

43. OPERATION DATE	44. OPERATION TIME *(Began and Ended)*	45. DRAINS	46. SPONGE COUNT	47. LABORATORY SPECIMEN

48. OPERATIVE DIAGNOSIS

49. OPERATION(S) PERFORMED ☐EPISODES OF SURGERY

50. COMPLICATIONS *(Continue on reverse, if more space is required)*

51. DICTATOR'S NAME, SERVICE & PHONE EXT	RECORDED IN REGISTER *(Initials)*

DA FORM MAR 82 4107 EDITION OF 1 JUN 73 MAY BE USED.

Figure 4-2. DA Form 4107, Operation Request and Worksheet.

4-4. DUTIES OF THE SCRUB

The scrub should anticipate the needs of the surgeons and have instruments, sponges, sutures, and other equipment ready for use. The usual procedures are as follow.

a. Hand the scalpel used to incise the skin (skin scalpel) to the surgeon. An alternate method of handing a scalpel is to place it on a hand towel or in an emesis basin. This is referred to as the "no touch" technique. Some local policies mandate this method because it reduces the likelihood of puncturing a glove with the scalpel blade.

b. After the skin incision is made, put the skin scalpel into a basin and remove it from the operative field onto the back table or cover the blade with a suture package. The blade of this scalpel is considered contaminated because the skin cannot be made sterile. The scalpel is to remain where you have placed it unless it is needed for enlarging the incision or for making stab wounds for drainage later during the case.

c. Pass instruments and supplies to the surgeon as he needs them; handing each instrument in the position that the surgeon will use it and in such a way that he can grasp it easily. There is to be NO hand contact when handing instruments (see Figures 4-3, 4-4, and 4-5).

d. Remove used supplies from the operative field. Keep the Mayo tray and the back table neat and orderly at all times. Keep the sterile field clean and dry.

e. Keep instruments free of blood with a moist sponge.

f. Clear the operative field of all loose sponges when the surgeon is ready to open the peritoneum. Once the peritoneum is open, use only laparotomy tapes and sponges on forceps.

g. Hand a threaded suture in a needle holder with the needle positioned so that the surgeon can use it without having to shift the instrument. When you pass the needle holder, hold the end of the longer strand of suture in your other hand to keep it out of the surgeon's way and to prevent it from dragging over the operative area.

h. Keep a mental count of the suture needles. Do not allow needles to lie loose on either the operative area or the Mayo table; they should be clamped in a holder. Make sure that you receive a needle holder and a whole needle from the surgeon in exchange for another. If part of a needle has been broken off, report this to the surgeon immediately so that he may take appropriate measures.

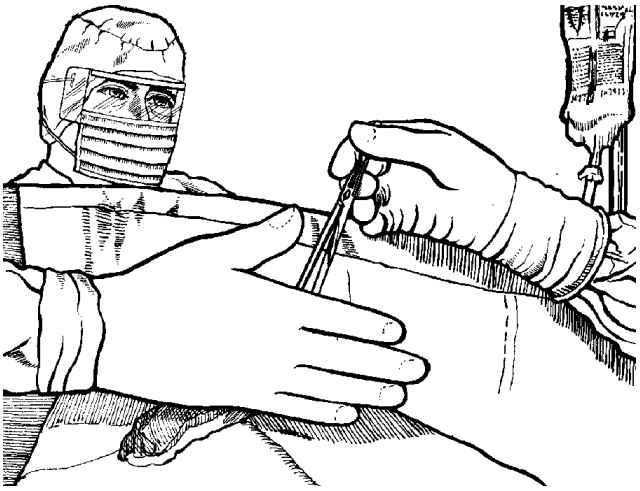


Figure 4-3. Scrub handing tonsil hemostat to surgeon.

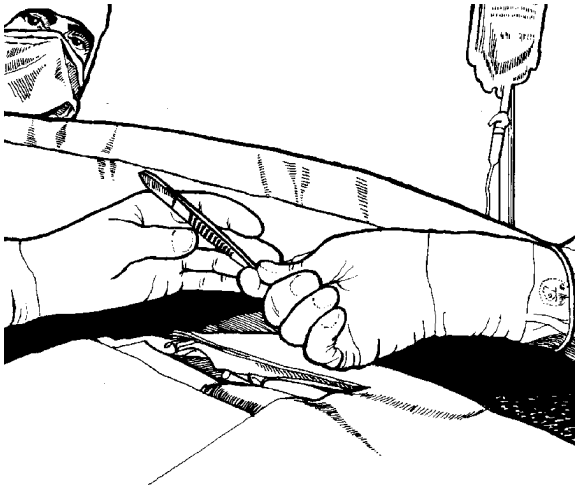


Figure 4-4. Scrub handing tissue forceps to surgeon.

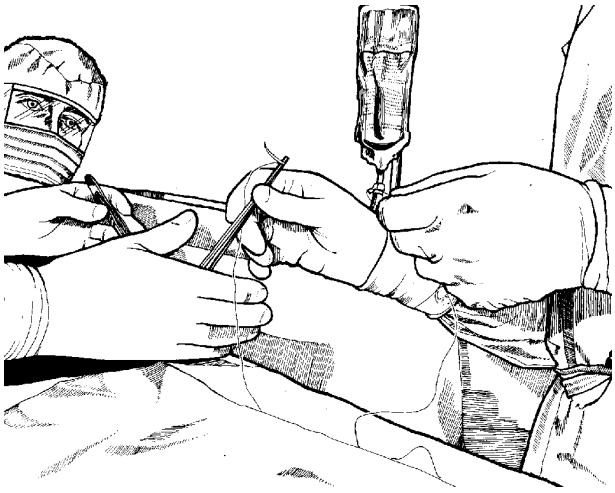


Figure 4-5. Scrub passing a threaded suture in a needle holder.

i. Pass the peritoneal suture to the surgeon when he is ready to start closure of the wound. At this point in the procedure, a sponge and sharps count is required. Again, both the scrub and an R.N. must see each sponge. The sponges in the various areas are counted separately (those discarded, those on the sterile tables, and those in the operative field) and then added to obtain the total count. The sequence used in the sponge count is: start with sponges around the incision; then sponges on the Mayo tray; then sponges on the back table; and, finally, the discarded sponges. The procedure is as follows.

(1) The circulator uses forceps to point to each discarded sponge.

(2) You are to handle the sponges remaining on the back table, separating each as it is counted so that both you and the circulator see every sponge.

(3) The surgeon may assist in counting the sponges remaining in the operative field.

(4) The counts are added and should total the number recorded for the initial count plus any that were opened during the case.

(5) You are to report the result of the sponge count to the surgeon. If the count is correct, he will proceed with closure of the wound. If the count is incorrect, all sponges are to be recounted at once. The circulator is to check the kick bucket and the floor. He will often need to don rubber gloves to see that all sponges are separated. The surgeon may assist in recounting sponges in the operative area. You are to check the instrument tables.

(6) If the count remains incorrect after the recount, the operating room supervisor is notified and normally assists with another recount. An X-ray of the operative area may be ordered. If so, it will be taken with portable X-ray equipment while the patient is still on the operating table.

(7) A sharps count is done at the same time and in the same manner as the sponge count. An instrument count is done with the first closing sponge count.

j. After the sponge, sharps, and instrument counts are completed, remove the instruments that are not needed from the Mayo tray and place the material needed for closing the wound on the tray.

k. Pass the necessary sutures to the surgeon, making sure that you receive intact each needle used by the surgeon (see paragraph h above). An X-ray may be necessary to locate a lost needle. While the surgeon is suturing the wound, you are to begin unclamping the instruments and placing them into solution in one of the basins in the basin stand.

l. Prepare the wound dressing during the closure.

m. When the surgeon finishes closing the skin, wet a sponge and wipe around the incision to remove the blood.

n. Hand the wound dressing to the surgeon.

Section II. PROCEDURES FOLLOWING SURGERY

4-5. DUTIES OF THE CIRCULATOR

After an operation is completed, the circulator assists the other team members in moving the patient from the operating table to the litter. He also assists the scrub in preparing the room for the next case. Cleaning should be performed as rapidly as possible (about 15 minutes is allowed) to prevent delay in starting the next scheduled surgical procedure. Specific tasks are given below.

a. Assist the surgeon in applying the adhesive strips to the dressing.

b. While the surgeon holds the dressing in place, remove the drapes from the patient and place it in the appropriate hamper. Ensure that all towel clamps have been removed from the drapes.

c. Disconnect the electrosurgical grounding pad from the patient.

d. Bring the litter into the room and assist in transferring the patient from the table to the litter. At least four team members are required to move the patient to the litter. The anesthetist moves the patient's head, a team member moves the feet, you (the circulator) get on one side of the table, and the surgeon gets on the other side. On signal, the patient is gently lifted onto the litter. If the patient is receiving an intravenous infusion, see that an I.V. pole is attached on the litter. Then, you are to secure the strap of the litter over the patient (according to local policy) for safety during transport.

NOTE: A bed from the ward may be used to transport the patient since this reduces the number of times the patient must be lifted. If a bed is used, bed rails are to be put into position.

e. Assist the anesthetist, as requested.

f. After the scrub has suctioned some saline through the tubing, disconnect the tubing from the suction machine.

g. When you return from transporting the patient to the Recovery Room, assist the scrub in preparing the room for the next patient. Wet vacuum the floor and clean all furniture as prescribed by local policy. Rearrange the furniture and replenish supplies.

h. Place a clean sheet and lift sheet on the operating table and put a towel across the head of the table (this is called "dressing" the table).

i. Clean any special equipment that was used and return it to the proper storage place unless it is needed for the next case. Report to the operating room supervisor or the NCOIC any defective equipment and remove it from the room. Complete all other assignments related to the case as directed by local policy; this includes taking tissue specimens to the appropriate place.

4-6. DUTIES OF THE SCRUB

The scrub is not to "break scrub" (contaminate his gown and gloves or the sterile equipment) until the patient has been taken from the room or is otherwise directed by anesthesia (according to local policy). Thus, if an emergency such as cardiac arrest should develop, the needed equipment remains sterile and the scrub is available to assist the surgeon. The duties after surgery are given below.

a. Remove knife blades from the handles. Use a needle holder to remove a knife blade; never use your fingers. When removing the blade, point the blade floorward and away from your body. Discard in accordance with local policy.

b. Likewise, all needles and other sharps are discarded into a sharps container according to local policy.

c. The local SOP will outline the procedures for handling used instruments and basins. In general, sort the instruments in the washer-sterilizer and process them; empty the solutions from the other basins; rinse and stack the basins; and discard used sponges into the kick bucket. Then discard the linen from the Mayo table and back table after checking for instruments and other equipment and place with the linen from the patient.

NOTE: For institutions that do not have a washer-sterilizer in the OR, refer to local SOP for cleaning the instruments and sending them to CMS to be reprocessed.

d. Check the supplies for the next case and consult with the circulator concerning particular items needed for the setup.

e. Discard your surgical mask and don a fresh mask. Then proceed to scrub for the next case.

f. Assist the circulator with the cleaning and restocking of the room for the next day's surgery if no additional cases are scheduled.

Section III. PROCEDURES FOR A LAPAROTOMY

4-7. GENERAL

A laparotomy is an opening made through the abdominal wall into the peritoneal cavity. In Lesson 3, the setup and preparation for surgery are outlined. In the Appendix, the procedures during surgery are outlined. The scrub should anticipate what items the surgeon will require during a procedure and have the items ready for the surgeon. The following information presents the requirements for a simple laparotomy using the normal sequence of events as an example of what the scrub would do during a laparotomy. The steps performed by the surgeon and the items furnished by the scrub for each step are presented along with illustrations of the incision while dissecting and while suturing. The instruments are also illustrated. Each doctor will identify his requirements for instruments, sutures, and needles on a surgeon's preference card that the scrub will use in preparing for the procedures. The Appendix illustrates one example of a laparotomy.

4-8. APPENDIX

The Appendix illustrates the procedures used by the surgeon and the actions taken by the scrub for a laparotomy, including the opening and closing of the peritoneal cavity.

a. The steps for opening and closing the peritoneal cavity are numbered, each beginning with Step 1.

b. Illustrations are not necessarily appropriate for each step and are so indicated.

c. Illustrations of items furnished by the scrub are shown the first time that the item is mentioned. Subsequently, reference is made to previous illustrations.

Continue with Exercises

EXERCISES, LESSON 4

INSTRUCTIONS: The following exercises are to be answered by marking the lettered response that best answers the question or best completes the incomplete statement or by writing the answer in the space provided.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers.

1. Which team member has the best opportunity to see breaks in aseptic technique?

   a. Scrub.

   b. Surgeon.

   c. Circulator.

   d. Anesthetist.

2. What instrument is used to split the external oblique muscle in the laparotomy as described in this subcourse?

   _____

3. When you (the scrub) hand a threaded suture to the surgeon, the end of the longer strand of suture should be _____ by you.

   a. Released.

   b. Threaded.

   c. Held.

   d. Tied.

4. The team member who brings the patient into the operating room loosens the sheets covering the patient before transporting him into the room. Why?

_____

_____

5. What determines the size (length) of hemostat used in a laparotomy as described in this subcourse?

_____

6. What is subcutaneous tissue?

_____

7. What is the "skin knife" used for in a laparotomy?

_____

8. When handing an instrument to the surgeon, the scrub snags his gloves. What action is taken by the scrub?

   a. Discard instrument, gown, and gloves. Replace with fresh gown and gloves and fresh instrument.

   b. Discard gown and gloves and replace with fresh gown and gloves.

   c. Discard instrument and change gloves.

9. Why does the circulator decontaminate the floor and walls immediately during the operation if they are contaminated by blood or other organic material?

_____

10. When the surgeon is ready to close the peritoneum, a sponge count is taken. You (the scrub) will report this count to:

    a. The surgeon.

    b. The circulator.

    c. The registered nurse.

    d. The operating room supervisor.

11. A thin membranous lining of the abdominal cavity beneath the posterior fascia is known as the _____ .

12. During an operation you (the circulator) are replaced by another circulator. What should you do before leaving the operating room?

    a. Brief the surgeon.

    b. Remove all waste material.

    c. Ground yourself by touching the operating room table.

    d. Brief the new circulator on what is taking place and count the sponges.

13. What size blade and knife handle are used for the primary incision in a laparotomy?

    _____

14. When a member of the surgical team observes a break in aseptic technique, what should he do?

    _____

15. The adhesive strips to be placed over the dressing on the patient's wound should be prepared by the:

    a. Scrub.

    b. Surgeon.

    c. Circulator.

    d. Assistant surgeon.

16. The surgeon has finished closing the skin incision during an operation. What should you (the scrub) do before handing him the wound dressing?

    a. Hand him a free tie.

    b. Remove the suction equipment.

    c. Take the drapes off the patient.

    d. Wipe around the incision with a wet sponge to remove the blood.

17. When does the surgeon see the abdominal cavity for the first time in the laparotomy described in this subcourse?

    _____

18. A tissue specimen to be photographed should be kept moist with which of the following solutions?

    a. Distilled water.

    b. Normal saline.

    c. 70% alcohol.

    d. 10% alcohol.

19. You (the scrub) receive a needle from the surgeon with part of the needle broken off. You should immediately:

    a. Report this to the surgeon.

    b. Report this to the circulator.

    c. Report this to the registered nurse.

    d. Request additional needles from the circulator.

20. Upon completion of a case, the litter for the patient should be brought into the operating room by which team member?

    _____

21. Which team member moves the patient's head from the operating table to the litter?

    _____

22. A _____ should be used to remove a knife blade from the handle.

23. What is the final disposition of knife blades?

    a. Stored for reuse.

    b. Placed on a knife rack.

    c. Immersed in disinfectant solution.

    d. Discarded in accordance with local policy.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 4

1. c (para 4-2a)

2. Curved Mayo scissors (Appendix, Opening Procedures, Step 8)

3. c (para 4-4g)

4. Prevents static electricity. Prevents the scattering of microorganisms due to vigorous handling of the linen. (para 4-2e)

5. Depth of wound (Appendix, Opening Procedures, Step 5)

6. Layer of fat beneath the skin. (Appendix, Opening Procedures, Step 4)

7. Making the primary incision. (Appendix, Opening Procedures, Step 3)

8. c (para 4-2c(2))

9. To prevent microorganisms from drying and becoming airborne. (para 4-2b (6))

10. a (para 4-4i(5))

11. peritoneum (Appendix, Opening Procedures, Step 10)

12. d (para 4-3n)

13. Scalpel no. 4 and blade no. 20 (Appendix, Opening Procedures, Step 3)

14. Speak up at once so that corrective measures can be taken. (para 4-2a)

15. c (para 4-3 l)

16. d (para 4-4m)

17. When the peritoneum incision is completed. (Appendix, Opening Procedures, Step 11)

18. b (para 4-3g(2)(b))

19. a (para 4-4h)

20. circulator (para 4-5d)

21. anesthetist (para 4-5d)

22. needle holder (para 4-6a)

23. d (para 4-6a)

End of Lesson 4

APPENDIX

OPENING PROCEDURES OF THE PERITONEAL CAVITY

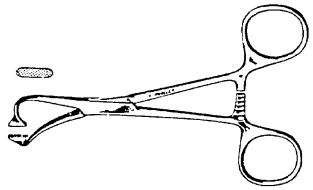
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
1. Not applicable.	1. Connect suction tubing to drape. Secure active electrode to drape.	1. Yankauer suction tube connected to tubing Nonperforating towel clips Electrosurgical unit active electrode ("pencil")	1. Yankauer suction tube  Nonperforating towel clip
2. Not applicable.	2. Laparotomy tape is placed on each side of the proposed incision site to protect the surgeon's gloved hands from the skin and to provide traction for making the skin incision.	2. Laparotomy tape	2. Laparotomy tape

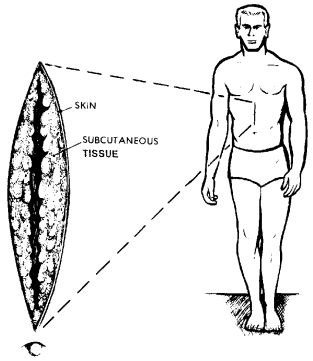
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
3. 	3. With knife #4 and blade #20, the skin incision is made. In making this primary incision, the surgeon may apply tension to the skin in one of three ways: 1) by pulling the skin upward at the upper end of the wound, cutting through the taut skin and shifting tension as he progresses downward; 2) by effecting pressure laterally to make the skin taut and side to side; 3) by exerting pressure in a downward direction, using a gentle outward pull to keep the skin taut. After making the skin incision, the surgeon returns the "skin knife" to the scrub who covers the blade and places the wound skin knife on the back table.	3. "Skin knife/scalpel (#4 knife handle with #20 blade) **NOTE**: When the knife handle and blade are put together as one, it can be called knife or scalpel.	3. #4 knife handle #20 blade

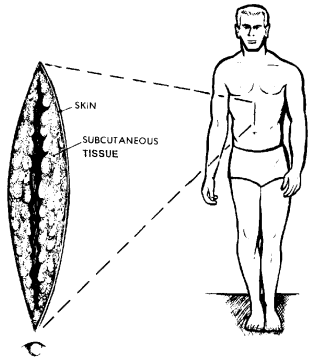
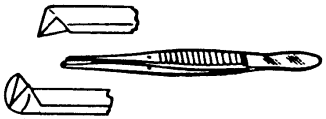
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
4. 	4. With knife handle #3 and blade #10, the skin incision is carried down through the subcutaneous or fatty layer to the fascia.	4. Deep knife (#3 knife handle and #10 blade) Sponges Tissue forceps **NOTE**: A #10 blade looks like a #20 blade but is smaller in size and can only be loaded on a #3 knife handle. A #20 blade can only be loaded on a #4 knife handle.	4. #3 knife handle #10 blade  Tissue forceps

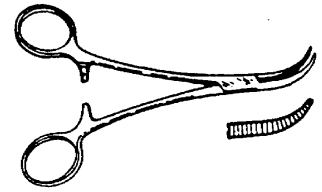
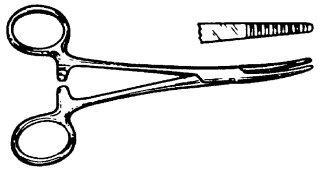
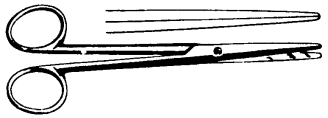
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
5. Not applicable.	5. Hemostats are used to control bleeding vessels. Clamped vessels are ligated (tied) or cauterized with the electrosurgical unit pencil. In the absence of an assistant, the surgeon may ask scrub to hold, then release, hemostats as ties are placed or electrosurgical unit is used.	5. Mosquito or Crile hemostats Suture ties per surgeon's preference (free ties or tie on reel) Straight Mayo scissors Electrosurgical unit pencil **NOTE**: Size (length) of hemostat is determined by depth of wound. **NOTE**: Discard soiled sponges and replace with unused sponges, as needed.	5.  Mosquito forceps  Crile hemostat  Straight Mayo scissors

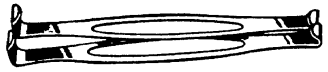
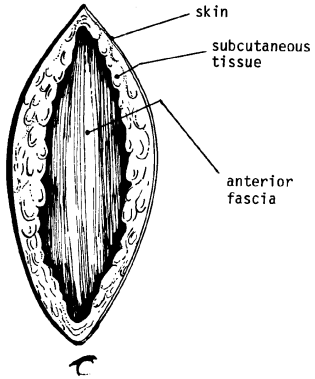
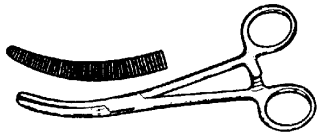
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATIONS
6. Not applicable.	6. The wound edges are retracted with small retractors.	6. Richardson retractors or Army Navy retractors	6. Richardson retractor  Army Navy retractor
7. 	7. With tissue forceps and scalpel, the external (anterior) oblique fascia is incised. Fascia is a layer of firm, connective tissue which covers the muscles.	7. Tissue forceps and deep knife (#3 handle with #10 blade) suture per surgeons's preference Crile or Kelly hemostats Straight Mayo scissors	7.  Kelly hemostat

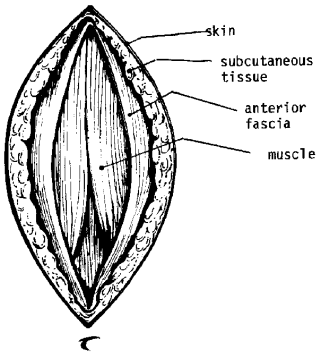
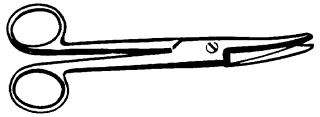
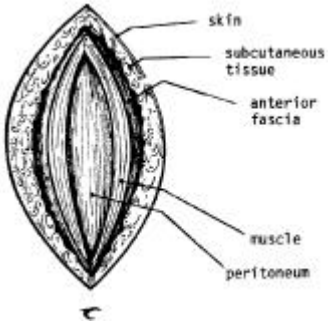
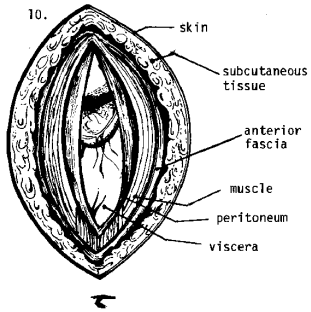
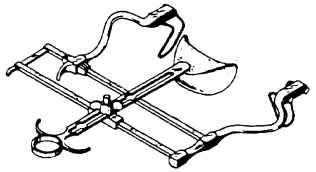
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
8. 	8. Using curved Mayo scissors, the external oblique muscle is split the length of the incision. Bleeding vessels are controlled with hemostats and ligatures. The external oblique muscle is then retracted.	8. Curved Mayo scissors Small Richardson retractors Suture Straight Mayo scissors **NOTE**: Curved Mayo scissors are used for muscle or tough tissue. Straight Mayo scissors are used to cut suture.	8.  Curved Mayo Scissors
9. 	9. The internal oblique and transverse muscles are split parallel to the fibers up to the rectus sheath with a scalpel or scissors. These muscles are then retracted. Abdominal muscles are split in this procedure. Where possible, the surgeon prefers to avoid interfering with muscular blood supply and nerve functions by making a "muscle-splitting" incision or retracting the entire muscle. With retraction of muscle fibers, the posterior (interior) fascia layer is exposed.	9. Curved Mayo scissors Crile hemostats Richardson retractors Deep knife (#3 handle with #10 blade)	9. See illustration #8 in "**closing procedures**" and illustrations #4, #5, and #6 in "**opening procedures**."

ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
10. 	10. The peritoneum is exposed; grasped with tissue forceps, and nicked with #3 knife handle with #10 blade. The peritoneum is the thin, membranous lining of the abdominal cavity beneath the posterior fascia and peritoneum and incises them together, using the point of the scalpel blade, make a small incision through both layers of tissue.	10. Deep knife (#3 handle with #10 blade) Laparotomy tapes Tissue forceps	10. See illustration #4 in "**opening procedures**."
11. Not applicable	11. By continually elevating the posterior fascia and peritoneum to avoid cutting internal organs, the surgeon extends the incision using Metzenbaum scissors. With the peritoneum incision completed, the surgeon sees the abdominal cavity for the first time	11. Metzenbaum scissors Moist laparotomy tapes	11. Metzenbaum scissors
12. Not applicable.	12. The peritoneum is retracted for exploration with large Richardson retractors or a Balfour retractor.	12. Large Richardson retractor or Balfour retractor.	12.  Balfour retractor

CLOSING PROCEDURES OF THE PERITONEAL CAVITY

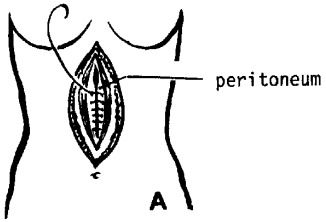
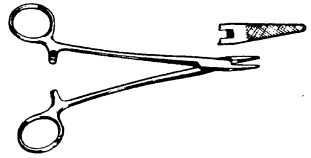
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
1. 	1. Two tissue forceps are used to approximate (bring together) the peritoneal edges. The peritoneal cavity and the posterior fascia are closed.	1. Suture (surgeon's preference) Needle holder Straight Mayo scissors Laparotomy tapes **NOTE**: The first closure sponge count is begun as soon as the surgeon begins to close the peritoneum. **NOTE**: "Sharps" (needles and knife blades) and instruments may also be counted IAW local SOP.	1.  Hegar-Mayo needle holder

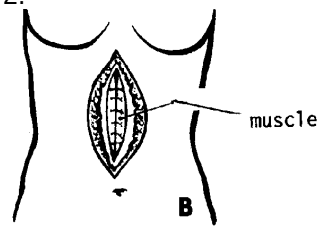
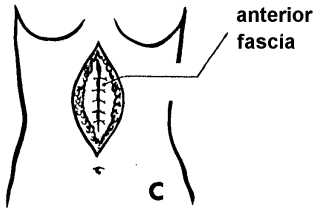
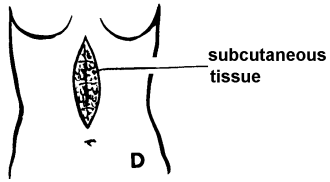
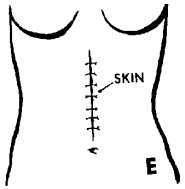
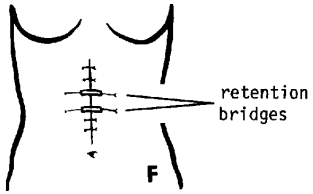
ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
2.  	2. The internal oblique transverse muscle, (B) the small opening at the outer border of the rectus sheath, and the external oblique fascia (C) are closed in layers using interrupted sutures. Sometimes retraction is necessary to hold tissue while suturing.	2. Suture (doctor's preference) Curved needle Needle holder Straight Mayo scissors Small Richardson retractors Laparotomy tapes	2. See illustration #1 in "**closing procedures**" and #5 and #6 in "**opening procedures**."
3. 	3. Fine interrupted gut or silk sutures may be used to close the subcutaneous tissue. Retraction is provided with sponges or small retractors.	3. Suture (per surgeon's preference) Needle holder Tissue forceps Army Navy retractors Small Richardson retractors Straight Mayo scissors	3. See illustration #1 in "**closing procedures**" and illustrations #4, #5, and #6 in the "**opening procedure**."

ILLUSTRATION	PROCEDURE BY SURGEON	ITEMS SUPPLIED BY SCRUB	ILLUSTRATION
4. 	4. Skin edges are approximated (brought together) with Adson forceps and interrupted fine silk sutures on a cutting needle are used for skin closure.	4. Suture (per surgeon's preference) Needle holder (if curved needle is used) Adson forceps Straight Mayo scissors Abdominal dressing	4. Adson tissue forceps
5. 	5. Occasionally, retention bridges will be used by the surgeon.	5. The final count is begun as soon as the surgeon begins to close the skin. This final count includes sponges, "sharps," and instruments IAW local SOP.	5. Not applicable

COMMENT SHEET

SUBCOURSE MD0935 Routine Procedures for an Operation EDITION 100

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paragraph	error	correction

3. List any suggestions you have to improve this subcourse.

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